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CHALLIS-SALMON INTEGRATED WEED CONTROL PROGRAM ENVIRONMENTAL ASSESSMENT

BLM

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Bureau of Land Management

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Acronyms

ACEC	Area of Critical Environmental Concern
APHIS	Animal and Plant Health Inspection Service
ATV	All Terrain Vehicle
BLM	Bureau of Land Management
CFO	Challis Field Office
CFR	Code of Federal Regulations
DNA	Documentation of NEPA Adequacy
EA	Environmental Assessment
EDRR	Early Detection/Rapid Response
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FICMNEW	Federal Interagency Committee for the Management of Noxious and Exotic Weeds
FMP	Fire Management Plan
HUC	Hydrologic Unit Code
ID Team	Interdisciplinary Team
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IPIF	Idaho Partners in Flight
NEPA	National Environmental Policy Act
NOAA Fisheries	National Marine Fisheries Service
OHV	Off-Highway Vehicle
PEIS	Programmatic Environmental Impact Statement
PER	Programmatic Environmental Report
POEA	polyoxyethyleneamine
RMP	Resource Management Plan
RNA	Research Natural Areas
ROD	Record of Decision
SFO	Salmon Field Office
SOP	Standard Operating Procedure
TMDL	Total Maximum Daily Load
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WSA	Wilderness Study Area

1 PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

The Bureau of Land Management (BLM) is preparing this Environmental Assessment (EA) for Integrated Weed Management for the Challis Field Office (CFO) and Salmon Field Office (SFO) planning areas. This EA discloses the direct, indirect, and cumulative environmental effects that would result from management of noxious weeds/invasive species, herein referred to as weeds, on BLM-administered public lands within the planning area as required by the National Environmental Policy Act of 1969 (NEPA, 42 United States Code [USC] 4321-4347), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and the BLM NEPA Handbook (H-1790-1; BLM 2008). The EA is organized following guidance in the BLM NEPA Handbook with additional documentation on file at the field offices.

This EA implements the tiering process outlined in 40 CFR 1502.20, which encourages agencies to tier environmental documents to eliminate repetitive discussions of the same issue. This EA is tiered to the *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS; BLM 2007a) that was released to the public on June 29, 2007 and the *Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report* (PER; 2007b).

1.2 Background

In response to the threats of noxious weeds and other invasive species, BLM and other federal agencies signed a Memorandum of Understanding in 1994 to coordinate and collaborate on weed treatment and prevention through the Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW). In addition, federal legislation including the Carson-Foley Act of 1968, the Federal Noxious Weed Act of 1974 (as amended), and the Plant Protection Act of 2000 authorize and direct the BLM to manage noxious weeds. The Idaho Noxious Weed Law of 1977 also establishes a legal requirement to control weeds designated by the state as noxious.

The BLM plays a major role in the success or failure of weed management in Idaho and has made weed management a priority on the lands it manages. The CFO and SFO weed control programs are coordinated with partners from other federal and state agencies, county and tribal governments, industry, conservation organizations, and private citizens. The goals of the weed control programs are:

1. Prevention of weed establishment
2. Early detection and rapid eradication of new weed infestations
3. Stabilization and rehabilitation of disturbed areas
4. Integration of weed management measures into land management actions/authorizations
5. Implementation and monitoring of weed control measures
6. Adaptive management for controlling new weed species and use of new and approved treatments.

Currently, both the CFO and SFO have a variety of weed treatment methods at their disposal to control weeds including manual and mechanical methods, biological, and herbicide use of a number of approved chemicals. These methods were approved as part of the integrated weed control strategies for the SFO and the CFO (by EA # ID-085-01-21 and EA # ID-01-084-0033, respectively). In addition, the CFO is also authorized to use prescribed fire (except in Wilderness Study Areas [WSAs]) and rehabilitate sites (by EA # ID-330-2006-EA-1483). These documents represent the current approved weed treatment methods available for the CFO and SFO and comprise the No Action alternative.

The PEIS, to which this analysis is tiered, was developed to guide the BLM's actions through its proposed treatment of vegetation, and specifically weeds, in 17 western states in the United States using 14 currently approved and four new herbicide active ingredients. In addition, a PER was developed that included analysis of prescribed fire and manual, mechanical, and biological treatment methods to control vegetation (BLM 2007b). The Proposed Action alternative expands on the No Action alternative to include the use of the four new chemicals approved in the PEIS and provides the CFO and SFO with the ability to expand their current programs with the use of these four additional chemicals. The Proposed Action alternative would also allow use of prescribed fire as part of cheatgrass control in the SFO (except in WSAs) and would make the types of methods available consistent across the two field offices. The analysis also includes a third alternative that authorizes use of the four new chemicals but prohibits aerial spraying of herbicides.

1.3 Type of Action

The type of action analyzed in this EA is integrated weed management on lands managed or administered by the BLM within the CFO and SFO.

1.4 Location of Proposed Action

The proposed action would take place on public lands in the CFO and SFO in central Idaho (Figure 1). The CFO and SFO currently have agreements in place with the counties whereby weed control and management work done within the field offices is coordinated with the county weed departments. Inventory and monitoring of weeds is performed jointly by BLM and the counties, along with various other agencies and individuals. The counties affected within the bounds of the CFO and SFO are Lemhi and Custer (Figure 2).

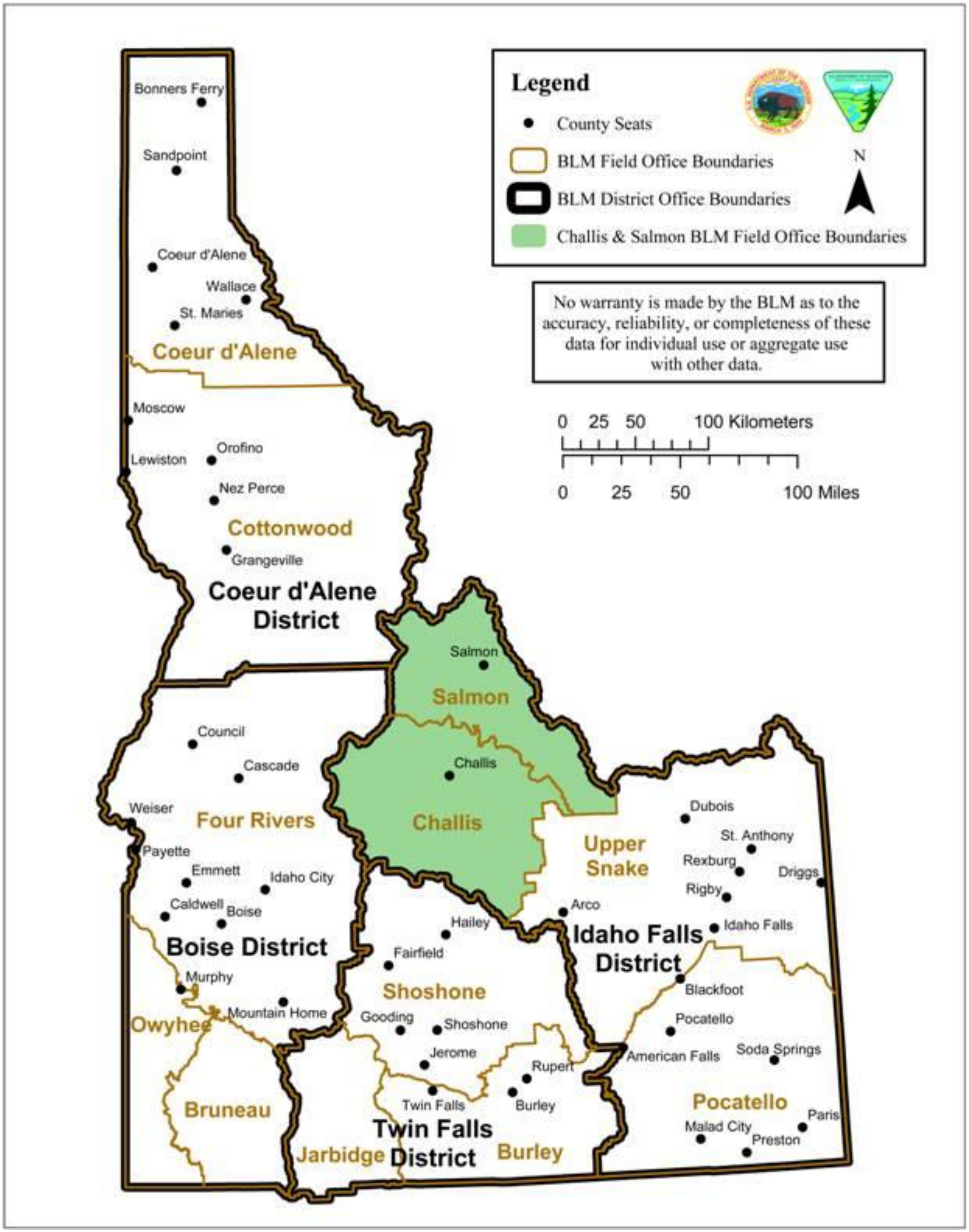
1.5 Purpose of and Need for Proposed Action

One of the BLM's highest priorities is to promote ecosystem health and one of the greatest obstacles to achieving this goal is the rapid expansion of weeds across public lands. The purpose of the proposed action is to manage noxious weeds and invasive species on public lands within the CFO and SFO using an integrated approach. Integrated weed management strategies may include prevention, mechanical, chemical and biological methods, and the use of fire. Invasive weeds are highly competitive and can often out-compete native vegetation, especially on recently disturbed sites. Left unchecked, weeds can create monocultures that degrade or reduce soil productivity, water quality and quantity, native plant communities, wildlife habitat, wilderness values, recreational opportunities, livestock forage, and be detrimental to agriculture and commerce of Idaho (BLM 2007a). Some weeds can impact wildland ecosystems; for example, downy brome (cheatgrass) rapidly invades disturbed areas and acts as a hazardous fuel, increasing fire frequency and intensity in sagebrush steppe and other upland ecosystems characteristic of this part of Idaho.

Noxious weeds and their continued expansion have been recognized as the single greatest threat to the integrity of native plant communities (Asher 1998). Millions of acres of once healthy, productive rangelands, forestlands, and riparian areas have been overrun by noxious or invasive weeds. The rapid expansion of invasive plant species across public lands continues to be a primary cause of ecosystem degradation, and control of these species is one of the greatest challenges in land management (BLM 2007b). BLM's desire to control invasive plants on public lands is driving the need for an integrated approach to weed management. Integrated weed control would improve ecosystem health, reduce hazardous fuels, and restore fire-damaged lands by: 1) controlling weeds and invasive species, and 2) manipulating vegetation to benefit fish and wildlife habitat, improve riparian and wetland areas, and improve water quality in priority watersheds.

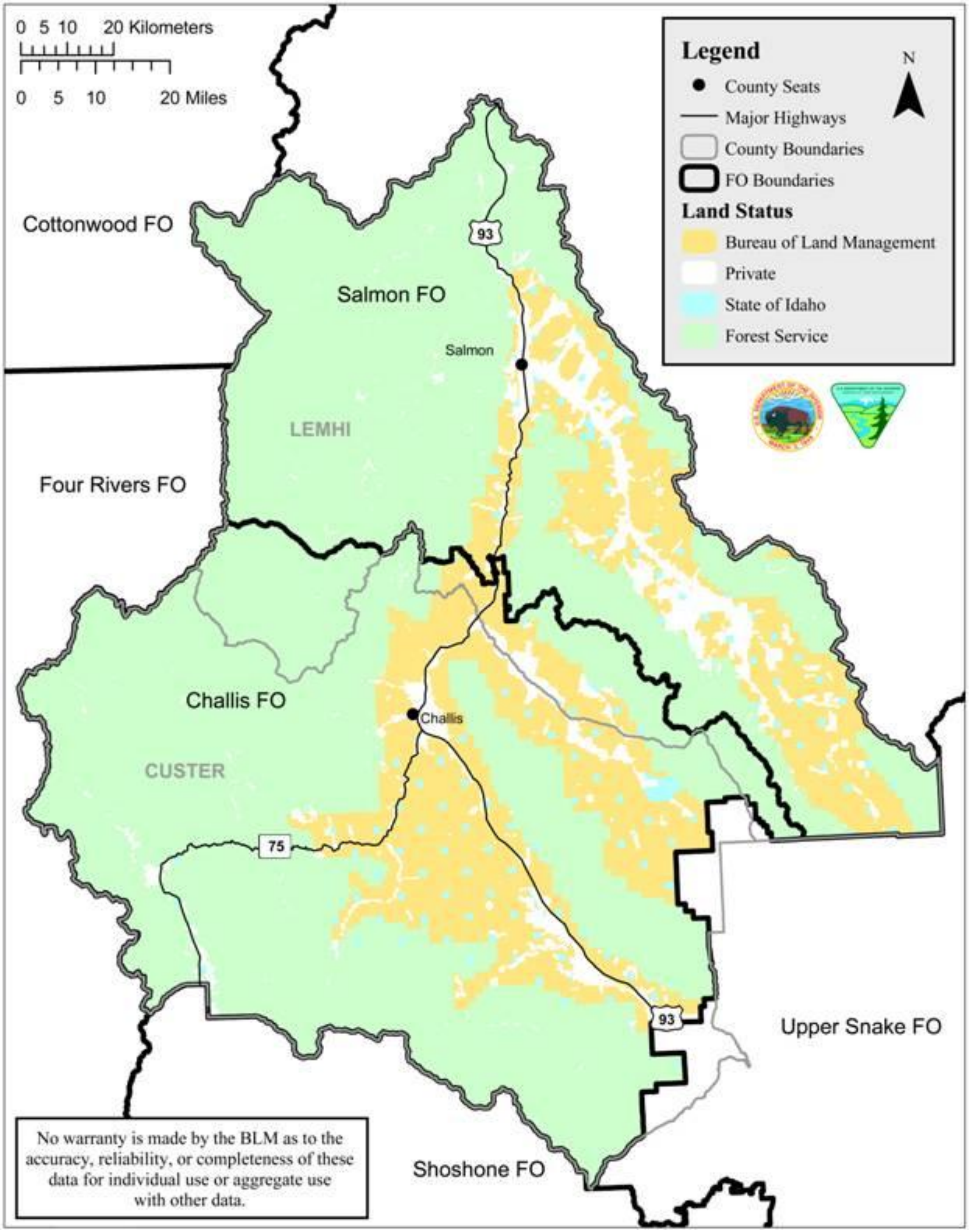
The proposed action is needed to enable land managers to implement a new integrated weed management program that utilizes the full complement of methodologies available to treat weeds (i.e., herbicide use, fire, mechanical and manual control, and biological control). Allowing use of the four herbicides approved in the PEIS would allow managers to address new conditions that have arisen since the prior analysis documented in the *Final Environmental Impact Statement (EIS) for Vegetation Treatments on BLM Lands in Thirteen Western States* (BLM 1991), such as increases in cheatgrass throughout the CFO and SFO.

Figure 1. Overview of Project Area.[1]



[1] Map Reference Information/Data for this and other figures is located in Appendix A.

Figure 2. Land status within the CFO and SFO.



1.6 Conformance with Applicable Land Use Plans

The Challis Resource Area Record of Decision (ROD) and Resource Management Plan (RMP) (BLM 1999) approved the BLM's plan to manage the public lands within the Challis Resource Area based on the October 1998 Proposed RMP (BLM 1998a). The Challis RMP addresses a wide range of resource management programs and issues and contains direction related to vegetation and noxious and invasive plant management. One of the management goals in the approved RMP is to manage soils and vegetation to (a) ensure properly functioning watersheds, (b) reduce noxious weed infestations, (c) maintain the sustainable productivity of forest lands, and (d) provide habitat for special status plant, animal, and fish species, habitat for a natural abundance and diversity of wildlife. Accordingly, resource managers are directed to plan and implement mechanical, chemical, and biological treatments that protect property and valuable resources, improve range and timber resource conditions, and perpetuate the natural ecosystem (RMP, p. 21). The RMP further states that a goal for noxious weed management is to reduce the potential for new infestations of noxious weeds and control expanding populations by reducing large infestations and eliminating small populations of noxious weeds that threaten or impact other resources (RMP, p. 45-46).

The Lemhi RMP (BLM 1987a, as amended) is the current land use plan for the SFO. Management decisions in the RMP Amendment provide flexibility in the use of prescribed fire and other vegetation treatment methods in order to improve resource values or conditions; reduce fuel hazards and the risk of catastrophic fire impacts to local communities and public lands resources; and otherwise support resource management objectives. The RMP Amendment discusses rehabilitation of public lands affected by fire, emphasizing the maintenance and restoration of native plant species and communities. Concerns about weeds are also discussed under specific resource sections in the RMP Amendment (e.g., off-highway vehicle [OHV] management emphasizes resource concerns including highly erodible or fragile soils, special status species habitat, water quality, wildlife habitat, threat of weed invasion, and wetland and riparian habitat).

1.7 Relationship to Statutes, Regulations or Other Plans

Broad objectives for management of vegetation on public lands are identified in BLM's *Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan* (WGA 2006); *Partners Against Weeds: An Action Plan for the Bureau of Land Management* (BLM 1996); and *Pulling Together: National Strategy for Invasive Plant Management* (FICMNEW 1997), while treatment activities at the local level are guided by the goals, standards, and objectives of land use and other plans developed at the field office level. The following laws, acts, plans, manuals, and policies provide a foundation for weed management by the BLM.

- The *Carson-Foley Act of 1968* (Public Law 90-583; 43 U.S.C. 1241 et seq.), and the *Plant Protection Act of 2000* (Public Law 106-224; 7 U.S.C. 7701 et seq.) authorize and direct the BLM to manage noxious weeds (including management of undesirable plants on federal lands) and to coordinate with other federal and state agencies in activities to eradicate, suppress, control, prevent, or retard the spread of any noxious weeds on federal lands.

- The *Federal Noxious Weed Act of 1974* (Public Law 93-629), *as amended by Section 15, Management of Undesirable Plants on Federal Lands, 1990*, (7 U.S.C. 2801 et seq.) authorizes the Secretary "...to cooperate with other federal and state agencies and others in carrying out operations or measures to eradicate, suppress, control, prevent, or retard the spread of any noxious weed." This Act established and funded an undesirable plant management program, implemented cooperative agreements with state agencies, and established integrated management systems to control undesirable plant species.
- The *Federal Land Policy and Management Act of 1976, as amended*, (Public Law 94-579; 43 U.S.C. 1701 et seq.) directs BLM to "...take any action necessary to prevent unnecessary and or undue degradation of the public lands."
- The *Idaho Noxious Weed Law* (Title 22 Agriculture and Horticulture, Chapter 24 Noxious Weeds, 1977) specifies the list of noxious weeds in the state and requires control of these designated weeds and other pests on public and private lands.
- The *Public Rangelands Improvement Act of 1978* (Public Law 95-514; 43 U.S.C. 1901 et seq.) requires that BLM manage, maintain, and improve the condition of the public rangelands so that they become as productive as feasible.
- *BLM Manual 9015: Integrated Weed Management, 1992*, provides policy relating to the management and coordination of noxious weed activities among BLM, organizations, and individuals.
- *Department of the Interior, Departmental Manual 609: Weed Control Program, 1995*, prescribes policy to control undesirable or noxious weeds on the lands, waters, or facilities under its jurisdiction to the extent economically practicable, as needed for resource protection and accomplishment of resource management objectives.
- The *Lemhi County Coordinated Weed Management Plan* (LCNWSC 1998) and the *Lost River Coordinated Weed Management Area Strategic Plan* (LRCWMA 2000). These plans identify priorities and responsibilities within each county, and provide a means of cooperative weed control across ownership boundaries.
- *Executive Order 13112, Invasive Species, 1999*, directs federal agencies to prevent the introduction of invasive species and provide for their control, and to minimize the economic, ecological, and human health impacts that invasive species cause.
- *The Challis Field Office Integrated Weed Management Program Environmental Assessment, 2003* (EA # ID-01-084-0033), describes the integrated weed control strategy adopted to protect and maintain the native vegetative communities throughout the Field Office area. A *Programmatic Biological Assessment for the Bureau of Land Management Salmon and Challis Field Office's 2002 Noxious Weed Control Program* (BLM 2002) was also prepared to analyze the affects of weed spraying on threatened and endangered species.
- *The Salmon Field Office Weed Control Program Environmental Assessment, 2001* (EA # ID-085-01-21), describes the integrated weed control strategy adopted to protect and maintain the native vegetative communities throughout the Field Office area.

- The *Noxious Weed Control and Eradication Act of 2004* (Public Law 108–412) established a program to provide assistance through states to eligible weed management entities to control or eradicate harmful, non-native weeds on public and private lands.
- The *Central Idaho Fire Management Plan* (FMP; BLM 2005) provides recommendations to the field offices to plan and implement mechanical, chemical, and biological treatment projects that integrate multiple RMP resource goals including treatments for noxious weed and invasive plant control.
- *The Challis Field Office Cheatgrass (Bromus tectorum) Site Rehabilitation Environmental Analysis, 2006* (ID-330-2006-EA-1483) was developed to provide guidance for management of cheatgrass in the field office area including burning or ground disturbing seed bed preparation activities.
- The *Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement, 2007*, and the *Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report, 2007*, analyzed the direct, indirect, and cumulative impacts to various resources from the proposed vegetation treatment project and alternatives.

The PEIS is the most recent NEPA compliance document in the fight against weeds and provides the impetus for the CFO and SFO to complete this updated analysis. The 2007 PEIS provides NEPA compliance by assessing the use of certain herbicides to treat undesirable vegetation on public lands administered by the BLM and provides a broad, comprehensive background source of information to which subsequent environmental analyses can be tiered. The programmatic analysis in the PEIS contains broad regional descriptions of resources, provides a broad environmental impact analysis, including cumulative impacts, focuses on general policies, and provides Bureau-wide decisions on herbicide use for vegetation management. Additionally, it provides a programmatic Endangered Species Act (ESA) Section 7 consultation for the broad range of activities described in the PEIS. Tiering of the analysis in this EA to the PEIS allows the CFO and SFO to prepare a more specific environmental document without duplicating relevant portions of the PEIS. The PEIS is used to facilitate the analysis process by providing BLM treatment design features and providing impact assessment data for herbicides. The general effects on the environment from using non-herbicide treatment methods, including fire use, and mechanical, manual, and biological control methods, to treat hazardous fuels, invasive species, and other unwanted or competing vegetation are disclosed in the PER (BLM 2007b).

2 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the alternatives considered by an interdisciplinary team (ID Team) for the proposed Integrated Weed Management Program for public lands within the CFO and SFO. The action alternatives are described in detail as is the No Action alternative (no change from current management) as required by Council on Environmental Quality regulations (40 CFR §1502.14d). Alternatives considered but not carried through for full analyses are also presented.

2.1 Description of Alternatives

Three alternatives were developed by the ID Team based on issues identified during scoping and from an understanding of the purpose and need for the project. The alternatives analyzed in detail include the No Action alternative (no changes from current management), the Proposed Action alternative (aerial and ground-based herbicide applications plus mechanical, biological, and combinations of treatments); and the No Aerial Herbicide Application alternative (ground-based herbicide application plus mechanical, biological, and combinations of treatments). Each of these is described in detail in the subsequent sections.

2.2 No Action Alternative

The No Action alternative would continue herbicide use and other treatment methods presently authorized for each of the field offices. Under this alternative, the BLM would be able to continue use of the active ingredients previously approved under the *Final EIS for Vegetation Treatments on BLM Lands in Thirteen Western States* (BLM 1991), but would not use the four new active ingredients approved in the *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (BLM 2007a). Aerial application of herbicides would not be available under this alternative.

For the CFO, the current management direction in the *Challis Field Office Integrated Weed Management Program EA* (BLM 2003) would be followed. The integrated weed control strategy in that EA was designed to protect and maintain the native vegetative communities throughout the CFO and the methods available for use include manual, mechanical, biological (including insects, pathogens, and grazing), prescribed burning, and the use of herbicides approved by the 1991 EIS, alone or in combination to treat different weed infestations in a variety of situations.

The integrated weed program on BLM-administered public lands in the CFO is based on weed management objectives and priorities that are influenced by weed infestations and site susceptibility. These criteria provide focus and direction for the weed program and allow for site-specific and adaptive decision-making. The overall control strategy would use biological agents for the long-term control of established weed populations. Herbicides would be used to control and eliminate new areas of weed spread and to contain existing infestations as a short-term control. Herbicide use on newly established weeds would have an almost immediate effect, and could eliminate or control the specified weed at that location. Manual control would be used in sensitive areas such as near rare plants, and for small isolated patches found when no herbicides are at hand. Inventories would determine where new infestations are occurring.

The SFO would continue to implement its current integrated weed management strategy using direction in the *Lemhi County Coordinated Weed Management Plan* (LCNWSC 1998), the

Salmon Field Office Weed Control Program Environmental Assessment (BLM 2001b), the *Lemhi Resource Management Plan* (BLM 1987a, as amended), and the 1991 EIS. These documents provide the BLM with flexibility in the use of vegetation treatment methods in order to improve resource values or conditions; reduce fuel hazards and the risk of catastrophic fire impacts to local communities and public lands resources; and otherwise support resource management objectives while emphasizing the maintenance and restoration of native plant species and communities. In addition, the *Central Idaho FMP* (BLM 2005) recommends that the SFO plan and implement mechanical, chemical, and biological treatment projects that integrate multiple RMP resource goals. Integrated non-fire fuels project components in the FMP include restoring desired plant communities; creating biological diversity; rejuvenating decadent vegetation; protecting recreational areas; removing noxious weeds, and removing biomass that modifies fire behavior. Non-fire fuels treatments identified in the FMP can be tailored to specific resource management objectives such as noxious weed control. However, fire use and restoration are not specifically approved for noxious weeds and invasive species control in the EA for weed control in the SFO.

2.3 Proposed Action Alternative

The preferred approach for weed control involves selecting from a range of possible control methods through an Integrated Weed Management Program to match the management requirements of each specific site with the goal of maximizing effective control and minimizing negative environmental, economic and social impacts. Integrated weed management utilizes prevention, detection, multiple treatment approaches, and education for use in eradicating, controlling, and/or containing noxious, invasive, and non-native weeds. This document describes and analyzes treatment options only; the effects of other components are outside the scope of this analysis. An integrated weed control program that utilizes manual, mechanical, biological, and chemical treatment methods, including aerial application of herbicides, and fire use, individually or in combination with other treatments, would be authorized under this alternative. Implementation of the Proposed Action alternative would provide BLM personnel with the herbicides available for vegetation treatment approved in the *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (BLM 2007a). Standard Operating Procedures (SOPs) for herbicide application were identified in the 2007 PEIS and would be followed.

Herbicides may be used to control and eliminate new areas of weed spread and to contain existing infestations. Fourteen of the herbicide active ingredients proposed for use under this alternative are those that have been previously approved and used by BLM (BLM 1991). The active ingredients in these herbicides are: 2,4-D, bromacil, chlorsulfuron, clopyralid, dicamba, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, sulfometuron methyl, tebuthiuron, and triclopyr. The four additional herbicide active ingredients proposed for use under this alternative – diquat, diflufenzopyr (in formulation with dicamba and known as Overdrive®), fluridone, and imazapic – have been deemed effective in controlling vegetation, have minimal effects on the environment and human health if used properly, are registered (except diflufenzopyr as a stand-alone active ingredient) with the U.S. Environmental Protection Agency (EPA), and were approved for use in the 2007 PEIS. Additional information concerning the herbicides available for use under the Proposed Action alternative is included in the 2007 PEIS. Appendix B contains a list of approved BLM herbicides, currently available formulations, and adjuvants.

Chemical treatment involves the application of herbicides (chemical compounds), via a variety of application methods, at certain plant growth stages to kill weed species. Depending on the type of herbicide selected, they can be used for weed control or complete eradication and may be used in combination with other control treatments. The use of new or updated chemicals approved in the future would entail additional NEPA analysis. Selection of an herbicide for site-specific application would depend on its chemical effectiveness on a particular weed species, habitat types present, proximity to water, and presence or absence of sensitive plant, wildlife, and fish species. Herbicides are effective for rhizomatous weed species that are unpalatable to livestock, require repeated cutting or pulling for control, or are located in remote areas where pulling and cutting are not feasible.

Application methods that would be used under the Proposed Action alternative would include spraying from backpack, horse, all-terrain vehicle (ATV), truck, helicopter or fixed wing aircraft. Aerial herbicide application would be considered for use on a project by project basis as needed. All vehicles, personnel, and equipment would be cleaned of seed and root fragments before leaving weed infested areas to prevent spread. Additional descriptions of SOPs and design features that would be employed when using herbicides are included in Appendix C.

All application rates, procedures, and restrictions would be within label rates and according to direction in the 2007 PEIS. To address concerns regarding herbicide drift, the BLM would avoid aerial application of bromacil, chlorsulfuron, diuron, and metsulfuron methyl, and would prohibit aerial application of sulfometuron methyl, on all public lands. Aerial applications of diquat would also be avoided in riparian areas and wetlands, as would the use of tebuthiuron in Native American traditional use areas. To address potential risks associated with polyoxyethyleneamine (POEA), the BLM would avoid using glyphosate formulations containing POEA, or seek to use formulations with the least amount of POEA, to reduce risks to amphibians and other aquatic organisms. In addition to the SOPs that are protective of resources/values in the planning area, restrictions would be applied to public lands in the CFO and SFO that are within anadromous fisheries or bull trout habitat. Appendix C contains additional information about restrictions and buffers for treatments in riparian areas.

Manual and mechanical methods are already approved in both field offices. Manual methods would typically be used on small isolated infestations, around sensitive plant locations, or in areas where chemical or biological control is not practical or is restricted, while mechanical treatments are often used on larger infestations where successful treatment often involves significant restoration efforts (see restoration discussion below).

Use of biological control is also previously approved in both field offices and the proposed strategy would continue and increase releases of all species of insects obtainable for spotted knapweed, leafy spurge, Canada thistle, Dalmatian toadflax, and musk thistle, in order to more quickly increase the insects' population growth and dispersal over the landscape. The overall control strategy under this alternative would continue to use biological agents for the long-term control of established populations of weeds and as more biological agents become available, it is anticipated that more species would be added to the agents already established. Additionally, if other species of weeds become well-established in the CFO and SFO that can be effectively controlled with biological agents, those agents would be released. In addition to using insects for biological control, domestic animals such as sheep or goats may be used to control the top-growth of invasive species. Biological control is cost-effective, environmentally safe, self-perpetuating, and well suited to integration within an overall weed program (McCaffrey and Wilson 1999).

Use of prescribed fire is previously approved in the CFO and under this alternative would be expanded to the SFO. Prescribed fire can be used to limit the expansion of weed populations by restoring native plant communities; appropriate use can be an effective tool against species such as yellow starthistle (DiTomaso et al. 1999), but fire can also promote the spread of species such as rush skeletonweed and spotted knapweed (Harrod and Reichard 2001). Prescribed fire would be used in a limited capacity in conjunction with herbicide spraying and restoration activities to remove surface litter and prepare the soil surface for reseeding, for example in areas of cheatgrass infestation.

Areas treated for weeds may require restoration with appropriate plant materials to reduce reinvasion of weeds and reduce soil erosion. Similarly, areas that have been burned may need restoration to prevent the establishment of weed populations. Under this alternative, the SFO would be authorized to complete these types of treatments as part of their integrated weed management program (the CFO already has this authorization). Revegetation would generally be limited to areas of 5 acres or less that meet one or more of the following conditions: 1) areas extensively treated with herbicide, 2) soils that are highly susceptible to soil erosion, 3) areas with high density of weeds, particularly cheatgrass 4) soils where weeds may readily invade and become established, or 5) areas that contain important wildlife habitat.

Based upon site-specific conditions, revegetation may include seed-bed preparation and seed/seedling plantings. Rangeland drill, hydro-, and broadcast seeding may be used for revegetation of desirable plant species, especially on larger areas. Seed would be distributed either by broadcasting on the soil surface or by placing seed into the soil at a predetermined depth. Plant materials used for revegetation would be selected to best meet the resource objectives and may include both native and introduced species. Planting of seedlings would be done when it is desirable to establish species quickly and to stabilize soils or restore wildlife habitat. This method is usually limited to bare root or containerized stock shrubs/trees. The disturbance associated with hand planting consists of the area within a 2-3 inch radius of the plant. Planting tools include planting bars, hodads, and augers. If hand planting is done the second growing season after a weed treatment, a 2’x 2’ clearing of vegetation for each seedling planted site may be required.

Approximately 100-800 acres/year would be treated with herbicides across the CFO. Approximately 200 acres/year would potentially be treated using manual/mechanical methods; and approximately 300 acres/year would potentially be treated using biocontrol methods (primarily insects). Biocontrol treatments using grazing animals have not been a component of the Challis program and if it did occur it would be on a case by case basis. The SFO would treat approximately 300 to 1,000 acres/year with herbicides. Biocontrol treatments would potentially be used on 1,000 to 10,000 acres/year, predominantly through target grazing. The number of acres treated would be variable from year to year, and more or fewer acres might be treated, depending on funding, inventories, and the variability in weed invasion dynamics.

In addition to watching for and treating as necessary the invasive species identified on Idaho’s Designated Noxious Weed List (see Chapter 3), other invasive species such as cheatgrass and Russian olive may be treated with herbicides. Spotted knapweed and leafy spurge infest the majority of acres that would be treated with herbicide. Generally, weed treatments would optimally take place prior to seed set. The amount of weed treatment and monitoring done would be based on available funding and staff. Information about monitoring is included in Appendix C. Species specific treatment options may be modified if an ID team determines that a new technique or program would provide more effective control of weeds and environmental impacts are covered under this EA. Species specific treatments may occur singly or in combination. Weed free seed mix, hay, and straw for permitted activities would be required on public lands. Additional information concerning the specific weed species that are most likely to be found and treated in the CFO and SFO are included in Appendix D.

Inventories would be conducted to determine where new infestations are occurring. Treatment practices that could potentially be used in the project area would be considered on a site- and species-specific basis. Selection of the most appropriate treatment practice depends on numerous factors, including risk of expansion, weed species biology, season, soil type, environmental setting, and objective. Passive treatments, such as removing the cause of disturbance, may be more effective over the long term than active treatments, and would be evaluated for their merit before implementing active treatments (BLM 2007a). Public awareness concerning invasive/noxious weed species control would be promoted including partnerships with other agencies and the Tribes. More detail about all of these methods is provided in the 2007 PEIS, to which this analysis is tiered.

2.3.1 Weed Treatment Priorities for the Proposed Action Alternative

The 2007 PEIS ROD identifies priorities for weed treatment that promotes an integrated approach to stop weed spread. These priorities, listed below, would be employed under the Proposed Action and No Aerial Application alternatives.

- Priority 1: Take actions to prevent or minimize the need for vegetation control when and where feasible, considering the management objectives of the site.
- Priority 2: Use effective non-chemical methods of vegetation control when and where feasible.
- Priority 3: Use herbicides after considering the effectiveness of all potential methods or in combination with other methods or controls.

Actions to prevent or minimize the need for vegetation control can include protecting intact systems; maintaining conditions that have led to healthy lands; reducing the impact of ongoing activities; and applying mitigation measures to new projects to minimize soil and vegetation disturbance and avoid introductions of invasive species. If treatment is required, efforts would be focused on activities that restore natural ecosystem processes, and on ventures that are likely to succeed and provide the greatest benefits with the least expenditure of capital. The integrated weed program on BLM-administered lands is based on weed management objectives and priorities that are influenced by weed infestations and site susceptibility. These criteria provide focus and direction for the weed program and allow for site-specific and adaptive decision making. Integrated weed management strategies may include, but are not limited to, prevention, mechanical, chemical and biological methods, and prescribed fire. These methods could be used alone or in combination; using only one method, such as herbicides, biological controls or hand-pulling alone, is not usually effective. For some of the most aggressive invaders, herbicides are the most effective way to control weed spread. However, herbicides would be selected for use only where they can truly be effective in controlling the spread of weeds that pose a threat to native plant communities.

The overriding goal is to prioritize treatment methods based on their effectiveness and likelihood to have minimal impacts on the environment, and to restore desirable vegetation on lands where necessary (i.e., where desired vegetation cannot reestablish naturally). The following would be used to prioritize weed treatments in order to focus efforts towards success.

- Highest Priority: New aggressive infestations in an uninfested area or small infestations in areas of special concern (e.g., WSAs, research natural areas).
  Management objective: Eradicate.
- Higher Priority: Areas of high traffic or sources of infestation and larger infestations in areas of special concern.
  Management objective: Control.
- High Priority: Existing large infestations or roadside infestations where spread can be checked or slowed.
  Management objective: Contain.

Applying this tactic to the Field Office level would result in the following general strategy:

1. Keep weed-free areas weed-free. Keeping weed-free areas weed-free is the most biologically- and cost-effective approach. Most of the native plant communities in the CFO and SFO are currently mid-seral to potential condition. Once an area has been taken over by weeds, restoration may be expensive and may not always return an area to its full native community of plants and animals. Thus it is better to maintain the native vegetation than to have to restore it.
2. Use insects and other biological controls, such as grazing, to limit and reduce weeds in areas where they are already well established and beyond control by herbicides, areas difficult to access, or sensitive areas where biological control is the most efficient method.
3. Use BLM approved herbicides or hand-pulling where weeds are establishing in new areas. Priorities for herbicide treatment would be (a) eradicating new invaders; (b) eradication of aggressive weeds with currently small populations in the CFO and SFO areas, including hoary cress and Russian knapweed; (c) protection of sensitive plant species populations imminently threatened by weed invasion; (d) eradication of new spotted knapweed invasions; and (e) roadside spraying for knapweed control.
4. Use herbicides or hand-pulling to control weeds along roads, at recreation sites and trail heads, and in other places where people and vehicles are likely to pick up and spread weed seeds.
5. Use hand-pulling and grubbing near sensitive plant species populations when it is determined that herbicides can not be used.
6. Consider restoration and re-seeding of areas where the native vegetation will not reestablish following weed control.
7. Monitor all types of treatment for effectiveness and adjust control methods accordingly.
8. Continue education, prevention, and inventory.

2.4 No Aerial Herbicide Application Alternative

This alternative is similar to the Proposed Action alternative in that it includes the same methods for the treatment of weeds, including all of the herbicides approved for use in the 2007 PEIS. Under this alternative, however, only ground-based techniques would be used to apply herbicides (i.e., no aerial applications of herbicides would be permitted). The weed treatment priorities, SOPs, design features, and other information described for the Proposed Action alternative would be applicable under this alternative. Although the majority of herbicide treatments anticipated during the next 10 years would involve use of ground-based methods, because this alternative would not allow aerial application, the number of acres treated would likely be reduced.

2.5 Alternatives Considered but Dropped from Further Consideration

In addition to the alternatives described in the subsequent sections, two other alternatives were considered by the ID Team and are described below. These alternatives would not fulfill the purpose and need for the project or are inconsistent with BLM or other federal, state, or local policies or regulations.

No Weed Control Alternative: This alternative would eliminate control of any weeds on public lands within the CFO and SFO, other than by the bio-control insects that have already been released. As weeds continue to invade and establish, the number and cover of native species would be reduced, erosion rates would increase, wildlife forage and bird habitat would be reduced, ecological processes (such as fire behavior) would be altered, and rare plants and habitats threatened. If not controlled, noxious weeds and other invasive exotic species, such as cheatgrass, would have great effects on ecosystem structure and function and the future productivity of the land would be compromised. Because this alternative promotes a perpetual decline in ecosystem health, it is not considered to be reasonable and is not considered in detail. It is also in conflict with the 1974 Federal Noxious Weed Law, the Idaho Noxious Weed Law (Title 22, Chapter 24, Idaho Code), the 1999 Executive Order on Invasive Species, and the 2007 PEIS.

No Use of Sulfonylurea and Other Acetolactate Synthase-Inhibiting Active Ingredients Alternative: This alternative was considered by the ID Team based on its development in the 2007 PEIS. Under this alternative, the BLM would not use certain herbicides containing sulfonylurea and imidazolinone chemistry or other acetolactate synthase-inhibiting compounds approved in earlier RODs. These active ingredients (i.e., chlorsulfuron, imazapyr, metsulfuron methyl, and sulfometuron methyl) do not constitute a large component of the chemicals used by the BLM but can be effective at treating some noxious weed species. Because this alternative would reduce the weed treatment options available for the BLM and the continued use of these ingredients would not result in any significant adverse impacts as determined by the analysis in the 2007 PEIS, it is not considered further here.

2.6 Summary of Alternatives

This EA addresses potential impacts that could result from integrated weed management in the CFO and SFO. Three alternatives are carried forward for analysis in this EA; the No Action, Proposed Action, and No Aerial Herbicide Application alternatives. Table 1 depicts the main components of each of these alternatives.

Table 1. Alternative Components.

Treatments	No Action Alternative	Proposed Action Alternative	No Aerial Herbicide Application
EXISTING CHEMICALS			
Includes use of the following active ingredients: 2,4-D, bromacil, chlorsulfuron, clopyralid, dicamba, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, sulfometuron methyl, tebuthiuron, and triclopyr	Yes	Yes	Yes
FOUR NEW CHEMICALS			
Includes use of the following active ingredients: diquat, diflufenzopyr, floridone, imazapic	No	Yes	Yes
INTEGRATED BURN/TREAT			
Cheatgrass burn and rehabilitation	No*	Yes	Yes
AERIAL SPRAY			
Allows aerial application of herbicides	No	Yes	No

*Challis FO is authorized to burn cheatgrass and rehabilitate sites through EA # ID-330-2006-EA-1483 and associated Field Manager's Decision dated 5/25/06.

3 AFFECTED ENVIRONMENT

Chapter 3 sets the framework for understanding the baseline environment – the existing environmental resources of the area – and assists the reader in understanding the analysis developed in Chapter 4 – Environmental Consequences. Following a description of the general setting of the project area, the information presented below is organized by 1) issues that are not present in the project area or that would not be affected and thus are not carried forward for detailed analysis, and 2) issues that are present and could be affected and thus are carried forward for detailed analysis. The list of resource issues addressed in this chapter was developed by ID Team based on project review.

3.1 General Setting

The CFO encompasses approximately 3.5 million acres in east-central Idaho and consists of BLM-managed public land, U.S. Forest Service (USFS), State, and private lands. Within the CFO the BLM manages approximately 794,000 acres of public land, generally in large blocks adjoining USFS lands at higher elevations and private lands at lower elevations. State lands are interspersed throughout CFO public lands. The CFO covers nearly all of Custer County and a very small part of Lemhi County. Livestock ranching, commercial and non-commercial recreation, mining, and utilization of forest products are among the most common uses of public lands within the CFO and SFO.

The Salmon and Big Lost Rivers are the principal drainages in the CFO. Major tributaries include the Pahsimeroi and the East Fork of the Salmon Rivers. The topography varies from broad valleys (Pahsimeroi, Round valleys) that transition into large mountain ranges (Lemhi, Lost River ranges) to narrow canyons (Salmon River "breaks," East Fork of the Salmon River) flanked by steep and dissected mountainous terrain that includes scree, cliffs, and numerous large rock outcroppings. Terrain within the principal drainages often limits human access and influences livestock and wildlife utilization patterns. Ownership patterns also limit access to public land in areas where easements have not been secured. Elevations on public lands range from 4,600 feet below the confluence of the main Salmon and Pahsimeroi rivers to over 10,000 feet at Jerry Peak.

Climate features include high levels of sunshine, low humidity, and high evaporation. Precipitation occurs primarily in the spring and fall as rain, with winters characterized by relatively low snowfall. Average annual precipitation varies from approximately 6 inches in Challis to 25 inches at Jerry Peak. Average winter snowfall ranges from 7 inches to 50-60 inches (BLM 1998a). Minimum and maximum average daily temperatures in Challis range from 9.4°F in January to 85.5°F in July. The mean annual temperature for the Challis area is 44.4°F (WRCC 2007).

The SFO is located in east central Idaho encompassing approximately 2.4 million acres, mostly within Lemhi County, Idaho. Within the SFO the BLM manages approximately 493,000 acres of public land, generally in large blocks adjoining USFS lands at higher elevations and private lands at lower elevations. State lands are interspersed throughout SFO public lands.

The Salmon River and one of its key tributaries, the Lemhi River, traverse the area and form the predominant natural features of the landscape. The rugged Salmon River Mountains flank the Salmon River corridor to the west, with the Lemhi Range and the Bitterroot Range of the

Beaverhead Mountains (Continental Divide) to the east. Elevations range from 4,000 feet at the confluence of the Lemhi and Salmon Rivers, to 11,000 feet along the Continental Divide.

The climate varies from near desert to alpine environments, primarily due to the dramatic variation in local topography and elevation. Cold winters and warm dry summers generally characterize the local weather patterns. Average annual precipitation ranges from less than 10 inches on the valley floors to 30 inches at higher elevations. Average winter snowfall ranges from less than 12 inches to more than 100 inches. Minimum and maximum average daily temperatures range from 12.2°F in January to 87.9°F in July. The mean annual temperature for the Salmon area is 45.7°F (WRCC 2007).

3.2 Critical and Other Important Elements of the Human Environment

Consideration of critical elements is required as specified in statute, regulation, executive order, or policy and must be considered in all EAs (Table 2). In addition, other important elements typically screened for impacts by BLM (e.g., recreation, soils) are generally considered in EAs. Critical elements and other important elements identified by an “X” in the “Not Affected” column (as determined by the ID Team) will not be discussed in detail in this EA. Elements that are present and are likely to be affected by the alternatives are discussed further in this chapter.

Table 2. Critical and Other Important Elements of the Human Environment.

CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT			**OTHER IMPORTANT ELEMENTS OF THE HUMAN ENVIRONMENT**		
The following elements of the human environment are subject to requirements specified in treaty, statute, regulation, or executive order, and must be considered in all environmental assessments.			The elements of the environment listed below are not included on the "critical elements" list, but are important to consider in assessing all impacts of the proposal(s).		
Elements	Not Affected	Affected	**Elements**	Not Affected	Affected
Air Quality	X		Paleontological Resources	X	
Areas of Critical Environmental Concern		X	Indian Trust Resources	X	
Cultural Resources	X		Wildlife		X
Environmental Justice (EO 12989) (minority and low-income populations)	X		Availability of Access/Need to Reserve Access	X	
Farm Lands (prime or unique)	X		Recreation Use, Existing and Potential	X	
Floodplains	X		Existing and Potential Land Uses		X
Invasive, Non-native Species		X	Vegetation types, communities; vegetative permits and sales; Rangeland resources		X
Migratory Birds		X	Fisheries		X
Native American Religious Concerns	X		Forest Resources	X	
Threatened/Endangered Plants; Sensitive Plants		X	Soils		X
Threatened/Endangered Fish; Sensitive Fish		X	Wild Horse and Burro Designated Herd Management Areas	X	
Threatened/Endangered Animals; Sensitive Animals		X	Visual Resources	X	
Wastes, Hazardous or Solid	X		Economic & Social Values		X
Water Quality – Surface		X	Mineral Resources	X	
Wetlands/Riparian Zones (including uplands)		X			
Wilderness	X				
Wild & Scenic Rivers	X				
Tribal Treaty Rights	X				

3.3 Affected Resources

3.3.1 Areas of Critical Environmental Concern

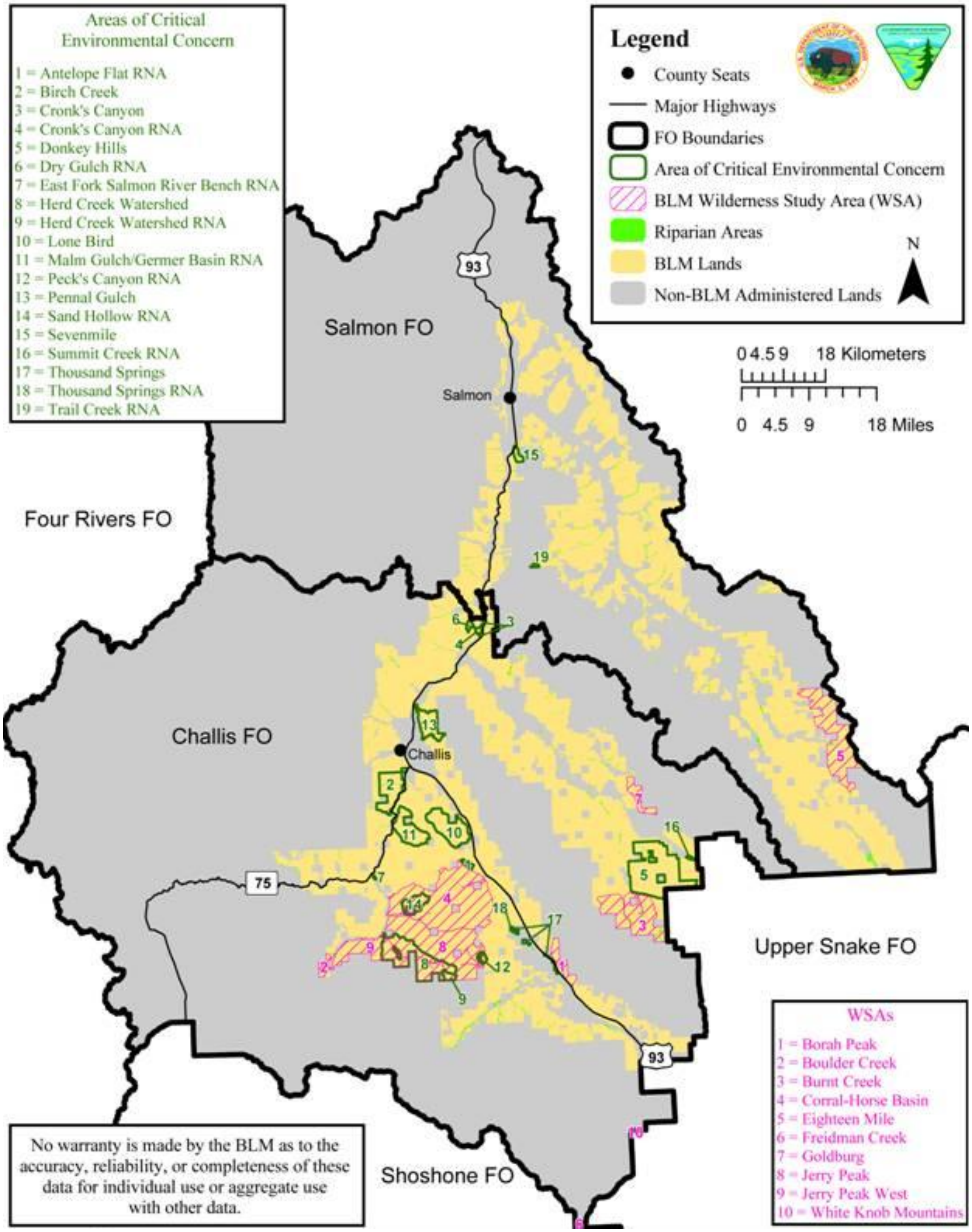
Areas of Critical Environmental Concern (ACECs) are defined as areas where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect human life and safety from natural hazards. Additionally, ACECs or portions of ACECs may be designated as Research Natural Areas (RNAs) in order to study natural, pristine, or unique characteristics of the area (BLM 1998a). Table 3 provides information regarding the ACECs that occur within the CFO and SFO, including acreage and designation rationale, and Figure 3 shows their locations. (Note: the White Knob WSA is administered by the BLM's Upper Snake Field Office and the Friedman WSA is administered by the BLM's Shoshone Field Office).

ACEC/RNA s are established and managed to protect ecological processes, conserve their biological diversity, and provide opportunities for observational activities associated with research and education. Treatment within these areas is limited to protect the value for which it was designated. Some protected areas have specific management decisions related to weeds. For example, the following pertains to Summit Creek ACEC/RNA: "Continue to allow noxious weed control in and around the exclosure area. Any weed control program would be done in a manner that would protect rare plant species" (BLM 1999; page 16). All management decisions would be followed in ACECs.

Table 3. Areas of Critical Environmental Concern.

Name	Acres	Values Present
Challis Field Office		
Antelope Flat ACEC/RNA	588	Unusual plant communities.
Birch Creek ACEC	8,649	Crucial bighorn sheep habitat. Sensitive and rare plants.
Cronk's Canyon ACEC/RNA	1,496	Bighorn sheep habitat. Pristine vegetation.
Donkey Hills ACEC	29,706	Crucial elk habitat.
Dry Gulch ACEC/RNA	539	Unusual plant communities and rare plants.
East Fork Salmon River Bench ACEC/RNA	78	Pristine and riparian vegetation.
Herd Creek ACEC/RNA	17,943	Spawning habitat for steelhead and Chinook salmon. Bull trout habitat. Riparian recovery demonstration area. Sensitive and rare plants. Roadless, primitive, and scenic values.
Lone Bird ACEC	9,969	Cultural sites. Tribal treaty rights. Sensitive and rare plants.
Malm Gulch/Germer Basin ACEC/RNA	7,823	Endemic and rare plants. Paleontological values. Fragile soils.
Peck's Canyon ACEC/RNA	782	Pristine vegetation including mountain mahogany.
Pennal Gulch ACEC	5,832	Sensitive and rare plants. Unique riparian area.
Sand Hollow ACEC/RNA	3,332	Rare plants. Fragile soils. Geological values.
Summit Creek ACEC/RNA	304	Unique wetland system. Sensitive and rare plants. Recreation, fisheries, waterfowl habitat.
Thousands Springs ACEC/RNA	843	Unique wetland system. Waterfowl habitat.
Salmon Field Office		
Sevenmile ACEC	1,060	Hazard concerns. Fragile soils.
Trail Creek ACEC	236	Pristine high-elevation riparian vegetation. Rare plants.

Figure 3. Location of ACECs, WSAs, and Wetlands in the CFO and SFO.



3.3.2 Invasive, Non-native Species

Noxious weeds are non-native plant species with the potential to displace native vegetation at the watershed and local scale. A noxious weed is any plant designated by a federal, state, or county government to be injurious to public health, agriculture, recreation, wildlife, or any public or private property (Sheley and Petroff 1999). Noxious weeds and their continued expansion have been recognized as the single greatest threat to the integrity of native plant communities (Asher 1998). As noxious weeds and other invasive non-native species become established, the number and cover of native species can be reduced, erosion rates can increase, wildlife, fisheries, and bird habitat is reduced, ecological processes may be altered, and rare plants and their habitats can be threatened (BLM, USFS 2000).

Idaho has 57 different species of weeds which are designated noxious by State law (Table 4). These weeds are designated into three levels of concern: Early Detection/Rapid Response (EDRR), Statewide Control, and Statewide Containment. The intent of the law's designation of certain weeds into the EDRR category is that reaction to their discovery within the state will be swift and aggressive. The goal would be to eliminate them from the state before they have a chance to spread (ISDA 2007). Most noxious weed species known to be present in Custer and Lemhi Counties are designated into the containment category. The most extensive infestations of noxious weeds in Custer and Lemhi Counties are spotted knapweed *(Centaurea maculosa*) and leafy spurge (*Euphorbia esula*), aggressive invaders capable of dominating the landscape in a variety of habitats. Other noxious weeds present in smaller numbers include rush skeletonweed (*Chondrilla juncea*), Russian knapweed (*Acroptilon repens*), whitetop (also known as hoary cress, *Cardaria draba*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), black henbane (*Hyoscyamus niger*), Dalmatian and yellow toadflax *(Linaria dalmatica* and *L. vulgaris*), dyer's woad (*Isatis tinctoria*), hoary alyssum (*Berteroa incana*), hound's tongue (*Cynoglossum officanale*), and puncture vine (*Tribulus terrestris*). The biology of each of these species is discussed in more detail in Appendix D. Noxious weeds and invasive non-native species are also discussed on pages 293-296 of the Challis Proposed RMP/Final EIS (BLM 1998a).

According to state law, control is defined as any or all of the following: prevention, rehabilitation, eradication or modified treatments. Prevention means any action that reduces the potential for the introduction or establishment of a plant species in areas not currently infested with that species; or any action that deters the spread of noxious weeds. Rehabilitation means the process of reconditioning formerly weed infested land to a productive or desirable condition. Eradication means the elimination of a noxious weed based on absence as determined by a visual inspection by the control authority during the current growing season. Modified treatment means treatment specified in an integrated weed management plan. Containment is defined as halting the spread of a weed infestation beyond specified boundaries.

Although not all of these species occur in the CFO and SFO areas, the BLM would treat these species under any of the action alternatives. In addition to the invasive species identified on Idaho's designated noxious weed list, other invasive species that may become problems or may be elevated to the list would also be treated for the life of this EA. This includes species such as downy brome (cheatgrass) and Russian olive.

Table 4. Idaho's Designated Noxious Weeds List

Statewide EDRR List	**Statewide Containment List**
Brazilian Elodea (*Egeria densa*)	Canada Thistle (*Cirsium arvense*)
Giant Hogweed (*Heracleum mantegazzianum*)	Dalmatian Toadflax (*Linaria genistifolia* ssp. *dalmatica*)
Hydrilla (*Hydrilla verticillata*)	Diffuse Knapweed (*Centaurea diffusa*)
Policeman's Helmet (*Impatiens glandulifera*)	Field Bindweed (*Convolvulus arvensis*)
Squarrose Knapweed (*Centaurea squarrosa*)	Hoary Alyssum (*Berteroa incana*)
Syrian Beancaper (*Zygophyllum fabago*)	Hound's Tongue (*Cynoglossum officinale*)
Tall Hawkweed (*Hieracium piloselloides*)	Jointed Goatgrass (*Aegilops cylindrica*)
Water Hyacinth (*Eichhornia crassipes*)	Leafy Spurge (*Euphorbia esula*)
Yellow Devil Hawkweed (*Hieracium* spp.)	Milium (*Milium vernale*)
Statewide Control List	Oxeye Daisy (*Chrysanthemum leucanthemum*)
Black Henbane (*Hyoscyamus niger*)	Perennial Pepperweed (*Lepidium latifolium*)
Bohemian Knotweed (*Polygonum bohemicum*)	Plumeless Thistle (*Carduus acanthoides*)
Buffalobur (*Solanum rostratum*)	Poison Hemlock (*Conium maculatum*)
Common Crupina (*Crupina vulgaris*)	Puncturevine (*Tribulus terrestris*)
Dyer's Woad (*Isatis tinctoria*)	Purple Loosestrife (*Lythrum salicaria*)
Eurasian Watermilfoil (*Myriophyllum spicatum*)	Rush Skeletonweed (*Chondrilla juncea*)
Giant Knotweed (*Polygonum sachalinesnse*)	Saltcedar (*Tamarix* spp.)
Japanese Knotweed (*Polygonum cuspidatum*)	Scotch Thistle (*Onopordum acanthium*)
Johnsongrass (*Sorghum halpense*)	Spotted Knapweed (*Centaurea maculosa*)
Matgrass (*Nardus stricta*)	Tansy Ragwort (*Senecio jacobaea*)
Meadow Hawkweed (*Hieracium caespitosum*)	White Bryony (*Bryonia alba*)
Meadow Knapweed (*Centaurea pratensis*)	Whitetop (*Cardaria draba*)
Mediterranean Sage (*Salvia aethiopis*)	Yellow Starthistle (*Centaurea solstitialis*)
Musk Thistle (*Carduus nutans*)	Yellow Toadflax (*Linaria vulgaris*)
Orange Hawkweed (*Hieracium aurantiacum*)	
Parrotfeather Milfoil (*Myriophyllum aquaticum*)	
Perennial Sowthistle (*Sonchus arvensis*)	
Russian Knapweed (*Acroptilon repens*)	
Scotch Broom (*Cytisus scoparius*)	
Silverleaf Nightshade (*Solanum elaegnifolium*)	
Skeletonleaf Bursage (*Ambrosia tomentosa*)	
Small Bugloss (*Anchusa arvensis*)	
Toothed Spurge (*Euphorbia dentata*)	
Vipers Bugloss (*Echium vulgare*)	

Many exotic plant species have not been designated as "noxious" by a governmental body. However these exotic species may also possess detrimental qualities that pose significant consequences to the environment. These species usually germinate under a wide variety of conditions, establish quickly, produce large amounts of seeds (often with long-term viability), and out-compete native species for light, pollinators, water, and nutrients. Principal non-native invasive species of concern are cheatgrass (*Bromus tectorum*), bull thistle (*Cirsium vulgare*), halogeton (*Halogeton glomeratus*), and sulfur cinquefoil (*Potentilla recta*). These species have not been designated as "noxious" in Idaho, but can also pose a serious threat to native vegetation.

The species listed above present differing levels of threat to local ecosystems within Custer and Lemhi Counties. Highly invasive species have the potential to dominate native ecosystems and displace native species on a large scale, or invade small but crucial habitats such as riparian areas. Examples include leafy spurge, spotted knapweed, rush skeletonweed, and cheatgrass for uplands and hoary cress, Russian knapweed, hound's tongue, and, in localized areas, Canada thistle for riparian areas. Species of lesser concern are designated noxious and present in the area but do not appear to overrun native vegetation communities, such as black henbane (BLM 2003).

3.3.3 Migratory Birds

Idaho Partners in Flight (IPIF), an organization formed to promote the conservation of land birds, has identified 243 species of birds that breed in the State of Idaho. Of these species, 119 are considered neotropical migrants. Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, issued in 2001, requires the BLM and other federal agencies to work with the U.S. Fish and Wildlife Service (USFWS) to improve protection for migratory birds. Migratory bird species are protected by legislation and it is important to maintain habitat for these species so migratory patterns are not disrupted. All migratory birds are protected under the 1918 Migratory Bird Treaty Act (16 USC 703), as well as the Neotropical Migratory Bird Conservation Act (16 USC Chapter 80) passed in 2000.

Migratory birds occur within both the CFO and SFO. The Idaho BLM sensitive species list contains 18 species of birds that IPIF considers "high priority" for conservation (see Appendix E). Top priority habitats for migratory birds include riparian, non-riverine wetlands, sagebrush shrublands, and Douglas-fir forest, and the BLM sensitive species list has birds in all four top priority habitats. Many of the birds identified as BLM sensitive species are migratory birds that spend the winter in southern latitudes and fly north to nest and fledge their young in the summer. Some migrate as far as the Arctic Circle to the southern tip of South America; others may only move from Idaho to Arizona.

3.3.4 Threatened/Endangered, Sensitive Plants

ESA listed (threatened or endangered), proposed and candidate species, are categorized as BLM Type 1 species. There are no ESA listed plants within either the CFO or SFO. However, BLM has identified sensitive plant species – designated by the State Director under 16 USC 1536 (a)(2) – as occurring within the project area. BLM Manual 6840, *Special Status Species Management*, requires that sensitive plant species be managed with the same level of protection as candidate species, to avoid being listed as threatened or endangered in the future. There are 12 special status plant species that occur throughout the CFO and 20 special status plant species that occur throughout the SFO. Some of these species occur within specialized niche habitats. Appendix E lists the name, habitat, and status of these sensitive plants.

3.3.5 Threatened/Endangered, Sensitive Animals

There are one mammal and one bird species that occur within both the CFO and SFO that are ESA listed (Table 5). Three additional species – gray wolf, grizzly bear and bald eagle – are in the process of being delisted or have recently been delisted from ESA protection but occur within the CFO and/or SFO. Brief summaries of these species are presented below.

Table 5. ESA Listed and Recently Delisted Animal Species within the CFO or SFO.

BLM Type 1 ESA Listed, Proposed & Candidate Species	ESA Ranking	Challis	Salmon
Canada Lynx (*Lynx canadensis*)	Threatened	X	X
Yellow-billed Cuckoo (*Coccyzus americanus*)	Candidate	X	X
Gray Wolf (*Canis lupus*)	Delisted in 2008	X	X
Grizzly Bear (*Ursus arctos*)	Delisted in 2007	—	X
Bald Eagle (*Haliaeetus leucocephalus*)	Delisted in 2007	X	X

The contiguous United States population of the Canada lynx was listed as threatened under the ESA (68 FR 40076) on March 24, 2000. The range of the Canada lynx extends from Canada and Alaska south to Maine, the Rocky Mountains, and the Great Lakes region, primarily within montane coniferous forest habitat. This species is suspected to occur within both of the field offices (USFWS 2007).

The yellow-billed cuckoo is an ESA candidate species that occurs in riparian habitats seasonally during migration (65 FR 8104). Suitable habitat for the yellow-billed cuckoo includes a cottonwood overstory and a dense willow/shrub understory that is used for breeding and rearing. Biologists estimate that more than 90 percent of the bird's western riparian habitat has been lost or degraded as a result of conversion to agriculture, dams and river flow management, bank protection, overgrazing, and competition from exotic plants such as tamarisk (USFWS 2001). The CFO and SFO are at the northern extents of yellow-billed cuckoo habitat and there have been no sightings of the yellow-billed cuckoo within the field office areas.

The gray wolf, previously listed as an experimental non-essential population in this portion of Idaho, was delisted from ESA protection effective March 28, 2008 (73 FR 10514). However, the process of delisting and assumption of management by the state of Idaho may take longer than a year, and litigation may delay the process. Until the process is complete, wolves in Idaho remain under the protection of the ESA. The Central Idaho Gray Wolf Recovery Area encompasses both the CFO and SFO. The wide range of habitats in which wolves can thrive reflects their adaptability as a species, and includes temperate forests, mountains, tundra, taiga, and grasslands. There are multiple active wolf pack territories within both the CFO and SFO and wolf sightings have been reported in both field offices over the past 10 years (IDFG 2007).

The bald eagle, previously a threatened species, was delisted from ESA protection in June 2007 (72 FR 37345). The bald eagle is present throughout the assessment area and is known to winter along the Salmon River and other large waterbodies within both field offices. The bald eagle is still under the protection of the Bald Eagle Protection Act of 1940, as amended (16 U.S.C.668 et. seq). The bald eagle is no longer listed under the ESA, but it is anticipated that the BLM will continue to monitor the bald eagle as a special status species.

On March 22, 2007, the USFWS announced that the Yellowstone Distinct Population Segment of grizzly bear is a recovered population no longer meeting the ESA's definition of threatened or endangered, and as such the species was delisted (72 FR 14866). The grizzly bear is listed as potentially occurring within the SFO, and is not classified as a special status species for the CFO.

BLM sensitive animal species are designated by the State Director under 16 USC 1536 (a)(2). BLM Manual 6840, *Special Status Species Management*, requires that sensitive animal species be managed with the same level of protection as candidate species, to avoid being listed as threatened or endangered in the future. The BLM special status animal species list is identical to the Idaho Department of Fish and Game (IDFG) list of species of special concern based on an agreement between the two agencies.

BLM sensitive species occur in all vegetation types present in the CFO and SFO (Appendix E). Table 6 provides a breakdown by field office of the different types of species associated with each special status classification (classifications are defined in Appendix E). Impacts to special status species are primarily related to habitat alteration or loss associated with activities which may include but are not limited to development, ground disturbing activities, and non-native species encroachment.

Table 6. BLM Special Status Animal Species Type by Field Office.

Classification	Mammal	Bird	Amphibian / Reptile	Insect	Total
Challis Field Office					
Type 2	1	1	0	1	3
Type 3	3	14	2	0	19
Type 4	0	0	0	0	0
Type 5	4	18	0	0	22
Total	8	33	2	1	44
Salmon Field Office					
Type 2	1	1	0	1	3
Type 3	3	15	2	0	20
Type 4	0	0	0	0	0
Type 5	4	17	0	0	21
Total	8	33	2	1	44

3.3.6 Threatened/Endangered, Sensitive Fish

There are four ESA listed fish species that occur within both field offices. These species are bull trout (*Salvelinus confluentrus*; threatened), Snake River sockeye salmon (*Oncorhynchus nerka*; endangered), chinook salmon (*Oncorhynchus tschawytscha*; threatened), and steelhead trout (*Oncorhynchus mykiss*; threatened). These species are associated with the main Salmon River, East, Middle, and North Fork Salmon Rivers, Pahsimeroi River, Lemhi River, and their tributaries. Protection of these species afforded by the ESA requires the BLM to ensure that all actions authorized or funded by the agency are not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of critical habitat of listed species (ESA Section 7 (a)(2)).

Three of these species – Snake River sockeye salmon, spring/summer chinook salmon, and steelhead trout – are under the jurisdiction of National Marine Fisheries Service (NOAA Fisheries) and occur within the general analysis area. The Snake River sockeye salmon was listed as endangered on November 20, 1991 (56 FR 58619). The Snake River spring/summer chinook salmon was listed as threatened on May 22, 1992 (57 FR 14653). Steelhead trout in the Snake River basin were listed as threatened on October 17, 1997 (62 FR 43937). Critical habitat has been designated for Snake River sockeye salmon and Snake River spring/summer chinook salmon (58 FR 68543, 64 FR 57399 and 65 FR 7764). Critical habitat for Snake River steelhead trout was designated on February 16, 2000 (65 FR 7764).

The bull trout is under the jurisdiction of USFWS and is listed under ESA. On July 10, 1998, the USFWS listed the Klamath and the Columbia River population segment of the bull trout as threatened (63 FR 31647). Bull trout critical habitat was designated on 09/26/2005 (70 FR 56212). However, none of the designated critical habitat occurs in the action area.

Pursuant to Section 305(b)(2) of the Magnuson-Stevens Act, Federal agencies must consult with NOAA Fisheries regarding any of their actions authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken that may adversely affect Essential Fish Habitat (EFH). The Magnuson-Stevens Act, Section 3, defines EFH as "those waters and substrate necessary for fish for spawning, breeding, feeding, or growth to maturity." Federal agencies may incorporate an EFH Assessment into ESA Biological Assessments.

In 1994, the USFS and BLM developed an ecosystem-based, aquatic habitat and riparian-area management strategy (commonly referred to as PACFISH) for Pacific salmon, steelhead, and sea-run cutthroat trout habitat on lands they administer. An additional interim management strategy, known as INFISH, applies to areas containing resident native fish such as bull trout not covered by PACFISH. In order to maintain habitat for ESA listed fish, the management strategies defined Riparian Habitat Conservation Areas (RHCAs) as follows:

<u>Buffers for Riparian Habitat Conservation Areas</u>

- 300 feet on each side of the stream channel for fish-bearing streams
- 150 feet on each side of the stream channel for permanently flowing non-fish-bearing streams
- 150 feet from the edge of water body for ponds, lakes, reservoirs, and wetlands >1 acre; key watersheds: 100 feet from the edge of RHCA feature; other watersheds: 50 feet from the edge of RHCA feature for seasonally flowing or intermittent streams, wetlands <1 acre, landslides, and landslide-prone areas.

In addition to the federally listed fish species, there are three special status fish species identified as occurring within the CFO and two special status fish species in the SFO (Appendix E). The westslope cutthroat trout (*Oncorhynchus clarki lewisi*) is classified as a BLM Type 2 species for both field offices. This species is found in small mountain streams, main rivers, and large natural lakes and requires cool, clean, well-oxygenated water. These habitat types are found throughout the CFO and SFO.

The shorthead sculpin (*Cottus confusus*) has been identified as a watch species in both field offices and is usually found in streams or rivers with rubble or gravel bottoms. This species occurs in habitats containing fast riffles of cold headwaters, creeks, and rivers and also in areas in large rivers with slow-moving water (e.g., along shorelines, in backwaters; NatureServe 2007). These habitat types are found throughout the CFO and SFO.

The torrent sculpin (*Cottus rhotheus*) is identified as a watch species for the CFO and occurs in swift waters of small to large rivers with stable gravel or rubble bottoms or along rocky lake shores (NatureServe 2007). Such habitats are found throughout the CFO.

3.3.7 Water Quality – Surface

The planning area contains a variety of streams, from very small spring creeks to reaches of medium and large rivers. Other surface waters include shoreline and open water habitat on lakes, reservoirs, ponds and playas, some of which, in the lower elevation rangelands, are only seasonally wet. The planning area also contains a number of public land springs, both developed for livestock water and undeveloped. Land ownership varies from solely federal to mixed ownerships with potential influences on water quality both upstream and downstream of the BLM reaches.

The dominant legislation affecting the nation's water quality and BLM's compliance with state water quality requirements is the Federal Water Pollution Control Act of 1972, including all subsequent revisions (commonly called the Clean Water Act). The primary goal of the Clean Water Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. The Clean Water Act requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters. States and tribes must adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the waters whenever possible.

Currently, the most significant water quality requirements affecting BLM's land management comes from section 303(d) of the Clean Water Act. Section 303(d) of the Clean Water Act establishes requirements for states and tribes to identify and prioritize water bodies that are water quality limited (i.e., water bodies that do not meet water quality standards). For waters identified on this list, states and tribes must develop water quality improvement plans known as total maximum daily loads (TMDLs) that establish allowable pollutant loads set at levels to achieve water quality standards. The EPA must then approve these plans. In Idaho, TMDLs are assessed on a subbasin level. A subbasin is based on a cataloging unit of the United States Geological Survey (USGS) and is identified by a USGS fourth field hydrologic unit code (HUC). Subbasins within the CFO and SFO are Big Lost, Pahsimeroi, Upper Salmon, Middle Salmon/Panther, Lemhi, and Birch Creek (IDEQ 2007).

Water quality in the CFO and SFO varies with the season and extent of human influence. Generally, water quality is good and impacts stem from non-point sources. Primary non-point sources of pollution include surface mining, mine tailings, irrigated crop production, livestock grazing, timber harvesting, streambank destabilization or modification, roads, and pastureland use. Additional information is presented in the Challis PRMP/EIS pages 301-305 (BLM 1998a).

Several stream reaches within the CFO and SFO have been identified as water quality-limited (303(d) listed) by the EPA and the Idaho Department of Environmental Quality (IDEQ). Pollutants identified in these reaches are sediment and/or nutrients, largely resulting from livestock production and, to a lesser degree, channel dewatering (which serves to concentrate organic pollutants and sediment). Several streams cross public lands within the CFO and SFO and are listed as water quality-limited by IDEQ. These streams are listed in Table 7, organized by subbasin, and the category of TMDL is also noted when one has been identified or in some way quantified (IDEQ 2007). There are no 303(d) listed stream segments within the SFO-managed portion of the Birch Creek subbasin.

Table 7. 303(d) Listed Waters in the CFO and SFO.

Big Lost River Watershed	
Hydrologic Unit Code	17040218 Big Lost River Subbasin
303(d) Listed Stream Segments and TMDLs	Big Lost River. Temperature
	Thousand Springs Creek. Sediment
	Twin Bridges Creek. Sediment
	Warm Springs Creek. Temperature
	East Fork Big Lost River (Starhope Creek to Forks). Sediment, temperature

	Corral Creek. Sediment, temperature
	North Fork Big Lost River. Sediment, temperature
	Warm Springs Creek
Beneficial Uses Affected	Cold water aquatic life, salmonid spawning, primary and secondary contact recreation, drinking water supply, and special resource water
Pollutants of Concern	Dissolved oxygen, flow alteration, excess nutrients, excess sediment, elevated temperature, and habitat alteration
Major Land Uses	Livestock grazing, recreation, agriculture, and transportation (roads)
Date Approved by EPA	August 2004
Pahsimeroi Watershed	
Hydrologic Unit Code	17060202 Pahsimeroi Subbasin
303(d) Listed Stream Segments and TMDLs	Pahsimeroi River. Sediment, temperature
	Patterson Creek
	Morse Creek
	Big Creek
Beneficial Uses Affected	Domestic water supply, cold water aquatic life, salmonid spawning, cold water biota, primary contact recreation, special resource water
Pollutants of Concern	Nutrients, sediment, flow alteration
Major Land Uses	Irrigated agriculture, dryland agriculture, rangeland, forest
Date Approved by EPA	December 2001
Upper Salmon Watershed	
Hydrologic Unit Code	17060201 Upper Salmon Subbasin
303(d) Listed Stream Segments and TMDLs	Salmon River
	Challis Creek. Sediment
	Garden Creek
	Warm Springs Creek
	Thompson Creek
	Kinnikinic Creek
	Road Creek
	Squaw Creek
Beneficial Uses Affected	Domestic water supply, cold water biota, salmonid spawning, primary and secondary contact recreation, special resource water
Pollutants of Concern	Sediment, temperature, nutrients, flow alteration, habitat alteration
Major Land Uses	Forest, irrigated cropland, range, urban
Date Approved by EPA	March 2003
Middle Salmon/Panther Watershed	
Hydrologic Unit Code	17060203 Middle Salmon/Panther Subbasin
303(d) Listed Stream Segments and TMDLs	Salmon River
	Diamond Creek
	Williams Lake. Phosphorus
Beneficial Uses Affected	Cold water biota, salmonid spawning, recreation
Pollutants of Concern	Sediment, pH, metals, dissolved oxygen, nutrients
Major Land Uses	Agriculture, mining, recreation
Date Approved by EPA	July 2001
Lemhi Watershed	
Hydrologic Unit Code	17060204 Lemhi Subbasin
303(d) Listed Stream Segments and TMDLs	Lemhi River. Fecal Coliform Bacteria
	Bohannon Creek. Sediment
	Eighteenmile Creek. Sediment
	Geertson Creek. Sediment
	Kirtley Creek. Sediment
	McDevitt Creek. Sediment

	Sandy Creek. Sediment
	Wimpey Creek. Sediment
Beneficial Uses Affected	Salmonid spawning, coldwater biota, primary and secondary contact recreation
Pollutants of Concern	Sediment, fecal coliform bacteria
Major Land Uses	Livestock grazing, irrigated agriculture, recreation
Date Approved by EPA	March 2000

3.3.8 Wetlands/Riparian Zones (including uplands)

Wetlands are generally defined as areas inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support vegetation that is typically adapted for life in saturated soil, and include bogs, marshes, and wet meadows (BLM 2007a). Wetlands are regulated under Section 404 of the Clean Water Act as a subset of Waters of the U.S. Within the CFO and SFO, wetlands may occur as saturated zones within stream corridors or associated with isolated upland spring sources. Many of these spring sites have been developed into ponds or troughs for livestock watering (BLM 2003).

Riparian areas have vegetation or physical characteristics directly influenced by permanent water. Typical riparian areas include stream banks and lake shores, but do not include ephemeral streams or washes lacking vegetation dependent on free water in the soil (BLM 1998a). Riparian areas and wetlands cover approximately one percent of public lands within the CFO and SFO, although they have an ecological significance that is greatly disproportionate to the area they occupy. According to University of Idaho, Moscow, Idaho Gap Analysis data (Scott et al. 2002) riparian and wetland vegetation on public lands within the CFO is approximately 7,400 acres and within the SFO is approximately 5,896 acres.

Dominant riparian tree species include quaking aspen and black cottonwood. Several different species of shrubs occur including willows, which dominate at higher elevations; and red-osier dogwood, water birch, alder, and chokecherry at lower elevations. In healthy riparian areas and wetlands, a rich diversity of sedges, grasses, and forbs can be found, while Kentucky bluegrass and various non-native annual forbs often dominate degraded habitats. Vegetation is discussed in more detail on pages 281-286 of the Challis Proposed RMP/Final EIS (BLM 1998a).

The functions of wetland and riparian areas include water purification, stream shading, flood attenuation, shoreline stabilization, groundwater recharge, and habitat for aquatic, semiaquatic, and terrestrial plants and animals (BLM 2007a). Protocols used by the BLM to evaluate and monitor riparian areas and wetlands are defined in Technical Reference 1737-9, *Riparian Area Management: Process for Assessing Proper Functioning Condition* (BLM 1998b). This categorizes areas as functioning, functional-at risk, or non-functional. The current assessed condition of riparian areas and wetlands within the CFO and SFO are shown in Table 8.

Table 8. Condition of Riparian Areas and Wetlands in the CFO and SFO.

2007 Riparian Condition (flowing water - lotic)							
Field Office Name	Miles						
	PFC[a]	Functional-at-Risk			Non-Functional	Unknown	Total
		(up)	(static)	(down)			
Challis	130	52	115	16	9	0	322
Salmon	157	37	105	6	20	0	325
2007 Wetland Condition (standing water - lentic)							
Field Office Name	Acres						
	PFC	Functional-at-Risk			Non-Functional	Unknown	Total
		(up)	(static)	(down)			
Challis	500	7	23	1	0	177	708
Salmon	410	342	0	40	62	0	854

[a]Proper Functioning Condition

Riparian areas in proper functioning condition have sufficient vegetation and physical characteristics to dissipate energy associated with high water flows, reduce erosion and improve water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and groundwater recharge; develop root masses and stabilize streambanks against cutting action; develop ponding and channel characteristics to provide habitat necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation.

Functional-at risk areas are in functional condition but an existing soil, water, or vegetation attribute makes them susceptible to degradation. Nonfunctional areas do not provide adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and therefore are not reducing erosion or improving water quality. The absence of certain physical attributes such as a floodplain where one should exist is an indicator of nonfunctioning conditions (BLM 1998a). Weeds such as thistles, knapweeds, and perennial pepperweed degrade riparian habitats and can lead to soil erosion and sedimentation, affecting hydrological function and fish habitat; there are currently no stream reaches within the CFO or SFO that are non-functioning or functioning at risk due to weed infestations (BLM 2003).

3.3.9 General Wildlife and Fisheries

Wildlife habitat within both field offices is composed principally of native sagebrush steppe. These native ranges consist primarily of shrubs such as big, low, black, and threetip sagebrush; mountain mahogany, and antelope bitterbrush. Common grasses include bluebunch wheatgrass, Idaho fescue, Sandberg's bluegrass, needlegrasses and Indian ricegrass. Forested areas are primarily composed of Douglas-fir and lodgepole pine, with spruce, aspen and cottonwood in riparian zones. Wildlife habitat management of public lands within the field offices consists of maintaining and improving food, water, and cover. Significant differences in habitat requirements exist between species, whereby good habitat conditions for one species may not meet adequate habitat conditions for another species. Riparian zones are regarded as important habitats for wildlife, providing water and highly variable structural diversity. Nongame wildlife occurring in the planning area include song birds, raptors, small mammals, amphibians, and reptiles. Game species include mule deer, elk, moose, bighorn sheep, pronghorn, black bear, mountain lion, greater sage-grouse, forest grouse, gray partridge, and rabbit.

The CFO contains approximately seventy-five major fisheries streams totaling 535 miles. Of these, approximately 302 miles cross BLM-administered lands and 233 cross either private or State lands (These figures do not include the miles of stream on USFS land). Some 172 miles of stream are inhabited by both resident and anadromous fish, and 363 miles have only resident fish (BLM 1998a). The SFO contains approximately 325 miles of riparian/stream habitat combined from the Lemhi and Salmon River Watersheds. Within the Salmon River watershed 53.1 miles of inhabited streams cross BLM-administered lands: 51.7 miles with anadromous and resident fish, and 1.4 miles with resident fish only. Within the Lemhi River watershed 99.7 miles of inhabited streams cross BLM-administered lands: 23.7 miles with anadromous and resident fish, and 76.0 miles with resident fish only. Common native and introduced fish species in the field office areas include rainbow trout, brook trout, brown trout and mountain whitefish.

3.3.10 Existing and Potential Land Uses

The majority of public land in the CFO and SFO is allocated to livestock grazing allotments. The CFO currently maintains 64 grazing allotments and the SFO maintains 96 grazing allotments. Each allotment covers a specific area, and may be managed via an Allotment Management Plan, which specifies season of use, class and number of livestock, and management objectives. A small percentage of allotments are used for season-long grazing or winter use (BLM 1998a). Due to the pattern of land ownership in Custer and Lemhi Counties, livestock permittees are highly dependent on public rangeland for summer grazing.

Noxious weed infestations can greatly reduce an area’s carrying capacity for domestic livestock, which tend to avoid most weeds (Olson 1999). Most grazing allotments in the CFO and SFO support cattle, which are more likely than domestic sheep to preferentially graze native plant species over weeds. Many weeds are unpalatable to domestic livestock due to toxins, spines, and/or distasteful compounds (Olson 1999). Certain weeds such as hound’s tongue, Russian knapweed, and halogeton are poisonous to livestock. Exotic annual grasses such as cheatgrass displace native perennial grasses which provide higher quality forage for grazing animals.

Weeds are present in some of these allotments, particularly those that are in close proximity to waterways, roads/highways, and farmlands. Vehicles, wind, humans, wildlife and livestock can spread weeds from infested areas to public lands and vice versa. Large, dense infestations of weeds compete with native vegetation for soil nutrients, water and sunlight and can seriously diminish forage production for livestock and wildlife. For example, leafy spurge reduces the cattle carrying capacity of rangeland in Montana by 75 percent. Forage losses in Montana from spotted knapweed infestations were valued at $4.5 million in 1984 and if spotted knapweed continues to spread in Montana at its current rate, at least 33 million acres will be infested by 2009 causing $155 million in annual forage losses (Bucher 1984). Additional information regarding grazing allotments and the impact of invasive non-native species on rangeland resources can be found on pages 244-253 of the Challis PRMP/EIS (BLM 1998a), and pages 3-10, 3-11, and 3-19 of the Lemhi RMP/EIS (BLM 1985).

3.3.11 Vegetation, Rangeland Resources

Vegetation types found within the CFO and SFO are typical for the Northern Rocky Mountain physiographic province and generally vary with elevation, aspect, and soil type. Vegetation in the higher elevations and north aspects generally consists of conifer species, while sagebrush-grassland communities dominate south and west aspects in the intermediate and lower foothills. Valley bottoms are primarily rangeland and irrigated pastureland interspersed with galleries of deciduous hardwoods. Riparian areas account for a relatively small portion of the area and less than one percent of public lands, but have an ecological significance that increases the impact of invasive non-native species in these areas.

Sagebrush-grassland communities cover more than 90 percent of public lands within the CFO. They consist primarily of shrub steppe and perennial grasslands, with pockets of mountain shrub at higher elevations and salt desert shrub on low elevation alkaline soils. Forested areas cover approximately 7 percent of public lands, the great majority of which consist of pure stands of Douglas-fir (Scott et al. 2002). The CFO also contains areas of rangeland seedings of crested wheatgrass (BLM 1998a).

Wyoming big sagebrush dominates the lowlands, interspersed with low sagebrush. Basin big sagebrush occurs in areas with deeper, more fertile soils. These areas transition to mountain big sagebrush at higher elevations, with an intermediate band containing threetip sagebrush, particularly on cooler wetter sites (e.g., north aspects). Higher elevation slopes can also contain stands of curl-leaf mountain mahogany. Bluebunch wheatgrass and Idaho fescue are the dominant grass species through much of the sagebrush steppe. Other common grass species include needle-and-thread and Sandberg's bluegrass. The sparsely vegetated salt desert shrub communities are dominated by shadscale, together with grasses such as sand dropseed and Indian ricegrass. Salt desert shrublands are fragile and particularly susceptible to invasion by non-native species.

The SFO also consists predominantly of sagebrush-grasslands (85 percent of public lands), with approximately 13 percent forest cover (Scott et al. 2002). Common species include Wyoming big sagebrush at lower elevations, interspersed with threetip sagebrush and also black sagebrush in the southern reaches of the SFO. These areas transition to mountain big sagebrush at higher elevations. Basin big sagebrush occurs in areas with deeper, more fertile soils. Bluebunch wheatgrass is the predominant grass on dry warm sites, with Idaho fescue occurring on the cooler, wetter north-facing slopes and at higher elevations. Sandberg's bluegrass is a common co-dominant; other common grass species include needle-and-thread on drier sites. Forested areas are dominated by Douglas-fir, transitioning to lodgepole pine and subalpine fir at higher elevations. Whitebark pine is found at the highest elevations, and Engelmann spruce occurs on cooler moister sites.

3.3.12 Soils

Soils across the CFO and SFO vary with local geology, topographic relief, and climate, leading to diverse and complex soil patterns. Many soils are residual (developed in place), formed from weathered sedimentary bedrock or the Challis volcanics. Lacustrine deposits (lakebed sediments) occur in certain valleys and alluvial soils (deposited by running water) can be found in lower elevation alluvial fans and along watercourses. Soil depths vary from very shallow on the steeper slopes to very deep in valley bottoms and alluvial fans. Soil textures are generally coarse with abundant gravel and cobbles.

The inherent erodibility of a soil type, considered with other factors such as slope, intensity of rainfall, type and density of vegetation cover, causes an area to be considered potentially highly erodible. The majority of sensitive soils that are highly susceptible to water erosion, particularly following disturbance or loss of vegetative cover, derive from weathered volcanics and poorly cemented silty and bentonitic portions of lacustrine sediments. Both the CFO and SFO have designated ACECs in areas of particularly sensitive soils.

Soils in the CFO and SFO are described in more detail on pages 269-271 of the Challis PRMP/EIS (BLM 1998a), and pages 3-19 and 3-20 of the Lemhi RMP/EIS (BLM 1985). Further information is provided in the soils descriptions associated with the soils survey conducted by the Natural Resources Conservation Service for Custer and Lemhi Counties in 1985.

3.3.13 Economic and Social Values

According to United States Census data the 2006 population estimate for Custer County is 4,180 with a median household income of $34,899. The figures for Lemhi County are 7,930 and $31,153. These figures compare to a median household income for Idaho of $40,509 (US Census Bureau 2007). This income discrepancy for the region may be due to the prevalence of highly seasonal employment opportunities and lower-wage jobs, although Custer County statistics appear to reflect a greater proportion of relatively highly paid mining jobs compared to Lemhi County.

Employment information demonstrates the continuing importance of ranching and mining to the economies of Custer and Lemhi Counties. Agricultural income derives predominantly from livestock, and the majority of irrigated land is in hay production. In Custer County the major employment sectors are: agriculture, forestry, fishing and hunting, and mining, providing 29.2 percent of employment, government 21 percent, educational, health and social services 15.6 percent, and retail trade 10.5 percent (US Census Bureau 2007). Within Custer County, different regions have varying employment bases, for example the Stanley area is highly dependent on tourism and government employment, while the Pahsimeroi and Big Lost River areas are strongly agricultural.

In Lemhi County the major employment sectors are: government providing 20 percent of the employment, educational, health and social services 18.6 percent, agriculture, forestry, fishing and hunting, and mining 16.7 percent, and retail trade 14.1 percent (US Census Bureau 2007). Within Lemhi County, regional variations include a dependence on tourism in the North Fork area, while Tendoy and Leadore are primarily agricultural.

Custer and Lemhi Counties each contain a very limited private land base as more than 90 percent of each county is under federal ownership. As a result, ranching is highly dependent on grazing access to public lands. The counties also receive a share of federal revenues (payments-in-lieu-of-taxes) as a substitute for real property taxes. Public lands play an important role in local residents' perceived quality of life, which for many is strongly based in the rural lifestyle and culture. Many of the locally available recreation opportunities may also have an economic benefit for area residents beyond the tourist income generated, for example hunting, fishing, and berry gathering. Firewood cutting is a common use of local forestlands. Noxious weeds can affect local economies by reducing the productivity of rangelands (see previous section on existing and potential land use). Additional information is found on pages 211-220 of the Challis Proposed RMP/EIS (BLM 1998a).

4 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This chapter discusses the environmental consequences of implementing the Proposed Action or alternatives, as described in Chapter 2. The No Action alternative (continuing herbicide use and other treatment methods presently authorized) serves as a baseline against which to evaluate the environmental consequences of the Proposed Action alternative (adding four additional herbicide agents approved for use in the 2007 PEIS), and the No Aerial Herbicide Application alternative. For each alternative, the environmental effects are analyzed for the resource topics presented in Chapter 3 that were carried forward for analysis.

Under NEPA, actions that could significantly affect the quality of the human environment must be disclosed and analyzed in terms of direct and indirect impacts, whether beneficial or adverse, as well as short and long term and cumulative effects. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action and occur later or farther away from the resource but are still reasonably foreseeable. Beneficial impacts are those that involve a positive change in the condition or appearance of a resource or a change that moves the resource toward a desired condition. Adverse impacts involve a change that moves the resource away from a desired condition or detracts from its appearance or condition. Cumulative impacts are the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

4.2 Proposed Action Alternative

The Proposed Action alternative would expand the range of approved herbicides available to BLM managers by including the four new herbicides approved in the 2007 PEIS. These would provide the CFO and SFO with more tools for effective weed treatment, particularly with regard to cheatgrass. Expansion of cheatgrass is associated with increased soil erosion, increased vulnerability to additional weed invasion, and altered fire regimes that can lead to a self-perpetuating conversion of native rangeland to annual grassland (USFS 2007). Use of the herbicide imazapic will provide BLM managers with a more effective herbicide option for treating cheatgrass while minimizing potential damage to non-target native perennial grasses, which are relatively tolerant of this herbicide (SERA 2001b). The Proposed Action alternative would also allow for aerial spraying of herbicides in areas which are unfeasible or uneconomical to treat with ground-based methods. This alternative would permit the SFO to use prescribed fire, in conjunction with herbicides and reseeding, as a tool to rehabilitate cheatgrass infestations. As stated earlier, the CFO already has this authority.

4.2.1 Areas of Critical Environmental Concern

Treatment in ACECs would be conducted in a manner that retains the values for which the ACEC was designated, including sensitive plant species, cultural resources, fish and wildlife, riparian habitats, geological resources/sensitive soils, and scenic and recreation values.

Hand treatment methods (pulling and grubbing) would be used in the vicinity of sensitive plant species whenever feasible, and sensitive plant species threatened by weed invasion would be a treatment priority. Some non-target plants in close proximity to weeds may be killed or damaged by herbicide drift or manual treatments that involve grubbing or digging. Soils would also be disturbed by manual treatments that involve pulling, grubbing, or digging out root systems. Both non-target plants and soils may be damaged or disturbed by the presence of weed control personnel. The collective impacts from these control measures would be localized and likely confined to a maximum of two to three years duration.

Biological agents could potentially be used where appropriate in ACECs. Risks to sensitive or rare plant populations present in ACECs due to biological agents should be minimal as agents released on public lands are permitted by the Animal and Plant Health Inspection Service (APHIS) following testing to ensure that they are host-specific and do not affect non-target species. Biological treatments using grazing animals would follow SOPs listed in Appendix C to minimize negative impacts to ACEC values. Mechanical treatments and soil disturbing activities would not occur in areas with highly erodible soils.

The Proposed Action alternative should have a beneficial impact on resource values because it would increase flexibility in treatment options by enabling the use of aerial spraying in areas that might otherwise be unfeasible to treat; and authorize the use of new, technologically advanced herbicides. Successful treatments that remove invasive vegetation would protect and enhance the values for which many ACECs were designated, such as rare and sensitive plant species and pristine vegetation communities.

Impacts to the values of ACECs would be minimized by following SOPs listed in Appendix C.

4.2.2 Invasive, Non-native Species

Successful implementation of the integrated weed management program under the Proposed Action alternative would prevent the expansion of, and ideally reduce weed infestations (BLM 2007b). Use of four new herbicides would result in more options for choosing herbicides to best match treatment goals and application conditions, and provide the best possibilities for successful control of targeted weeds. Use of the most technologically advanced herbicides would reduce risk to non-target plants and therefore also reduce the risk of weed reinvasion occurring before native vegetation reestablishes. Herbicide use would primarily be used to target weeds, such as spotted knapweed, rush skeletonweed, Dalmatian toadflax, yellow toadflax, leafy spurge, hound’s tongue, Canada thistle, and cheatgrass, that pose a serious ecological threat to native plant communities; particularly when manual, mechanical, or biological controls are not effective or unavailable. The wider range of herbicides and herbicide types available to combat diverse weed species would minimize the chance that invasive species would become resistant to herbicides that are sprayed in the same location for several years. Weed resistance to herbicides would be minimized by using multiple herbicides with different modes of action in the same application, alternating herbicides with different modes of action each year, or alternating herbicide use with other effective forms of treatment (BLM 2007a). Additionally, the ability to employ aerial spraying of herbicides in areas that are unfeasible to treat by ground-based methods (e.g., due to steep, remote terrain) would enable the CFO and SFO to treat more acres than practicable under currently authorized treatment programs.

The effectiveness of herbicide treatments in managing target plants and the extent of disturbance to native plant communities would vary by the extent and method of treatment (e.g., aerial vs. ground) and chemical used (e.g., selective vs. non-selective), as well as by local plant types and physical features (e.g., soil type, slope) and weather conditions (e.g., wind speed) at the time of application (BLM 2007a). The effects of herbicide treatment on target plants would also depend on their mode of action. Application of treatments prior to seed set, when possible, would result in maximum effectiveness. A combination of several treatments may be necessary to achieve optimum control, for example by using biological controls to reduce the size of a weed infestation to the level where herbicide treatments become feasible (e.g., grazing leafy spurge).

Mechanical and manual methods would reduce weeds in localized areas targeted for treatment. Mechanical and manual methods are often more time and labor intensive than herbicide application, and cause soil disturbance, which can provide the appropriate conditions for invasive weeds to resprout from roots and rhizomes or grow from dormant seeds. Mechanical treatments would most likely be used for seedbed preparation in conjunction with other treatments for controlling cheatgrass. Manual treatments would most likely be used in the vicinity of sensitive areas (eg. riparian areas, near sensitive plant populatins) and to treat small newly discovered infestations of non-rhizomatous weeds where appropriate. These treatments are limited in controlling weeds such as leafy spurge, Dalmatian toadflax, yellow toadflax, Russian knapweed, and Canada thistle.

Biological control agents would reduce the amount of weeds in localized areas; however, the success of biological control programs often depends on the presence of a more desirable plant community that can fill in the spaces opened by the removal of weeds (BLM 2007a). Biological treatments would not eradicate target species, but could result in enough pressure to reduce dominance to more acceptable levels. Species for which approved biological controls exist include leafy spurge, spotted knapweed, rush skeletonweed, Dalmatian toadflax, yellow toadflax, musk and Canada thistle. Flea beetles have proven successful in controlling leafy spurge (Andersen et al. 2000), particularly when combined with other treatments that reduce the initial density of the infestation (NDSU 2002) and seed head flies can reduce seed production in spotted knapweed by up to 40 percent (Storey et al. 1989), although multiple agents may be required for success.

Targeted grazing would reduce the amount of weeds in localized areas and it is likely that it would continue to be used by the SFO to treat both knapweed and leafy spurge. Local studies have shown promise in reducing knapweed density by targeted grazing with cashmere goats; seed production was reduced by nearly 90 percent by grazing twice – once during early growth and once again following seed head development (Williams et al. 2002). Even a single grazing rotation provided substantial benefits by reducing seed head production compared to the ungrazed control plot.

Prescribed fire would provide effective control of some invasive annuals with short-lived seed banks such as cheatgrass and would be especially effective when followed up with herbicide treatments (Grace et al. 2001). However other weeds (e.g., knapweeds, leafy spurge, rush skeletonweed, bull thistle) could be stimulated by fire, especially if large seedbanks were present (Harrod and Reichard 2001). For successful treatment, restoration, including seeding, would have to occur in a timely manner after treatment to minimize the potential for erosion or weed invasion (Brooks and Pyke 2001).

Effectiveness monitoring would determine which treatment methods, separately or in combination, are most successful for a given species and treatments would be adjusted accordingly to provide the maximum reduction in weeds. Overall, this alternative would provide the greatest likelihood of reducing the level of weed infestations within the CFO and SFO and successfully eradicating new invasions.

4.2.3 Migratory Birds

Integrated weed control has the potential to result in both beneficial and adverse effects to migratory birds. Because manual treatment methods would likely be used on small areas these methods are not anticipated to adversely affect migratory birds. Likewise, biological controls are not expected to result in adverse impacts because non-target vegetation is not generally affected. Mechanical methods and prescribed fire could potentially disturb large areas and affect non-target vegetation but these effects would be of short duration, lasting only until revegetation of desirable species occurs. In addition to loss of non-target vegetation, negative impacts from use of herbicides could include health effects from exposure to herbicides (BLM 2007a; pg. 4-93). Use of the four new herbicides would have less impact on migratory birds because they are safer for wildlife species in general. They have also been found to be effective in riparian areas – which provides habitat for many migratory birds – without impacting water quality.

While treatments are occurring, birds would be unlikely to use the affected area, which would temporarily reduce available habitat but would also reduce the likelihood of direct negative impacts from herbicide spraying, prescribed fire, or mechanical treatments. Their ability to flee the treatment area would reduce the potential for effects. Impacts associated with soil disturbance and habitat alteration would be out weighed by the long-term improvement of habitat associated with the removal of invasive and noxious weeds and the reestablishment of native vegetation. Adverse effects would be minimized by following SOPs detailed in Appendix C and long-term positive impacts from all treatments would include improvements in habitat and ecosystem function.

4.2.4 Threatened/Endangered, Sensitive Plants

Integrated weed control has the potential to affect sensitive plants if they are present in or near treatment areas. Treatment of noxious and invasive weeds poses a risk to special status plants as a result of disturbance associated with manual and mechanical treatments (i.e., soil compaction, ground disturbance, and accidental pulling of individuals) and herbicide drift from treatment areas. Herbicides sprayed directly on any of the special status plants species would likely harm or kill the individual plant, and overdrift could result in death of individuals or small populations. Roadside herbicide spraying could affect sensitive species that occur along roadways and in disturbed areas, such as wavy-leaf thelypody, Challis milkvetch, and Salmon twin bladderpod. Care would be taken when herbicides are applied and approved SOPs (including training spray crews in identification of sensitive plants) would be followed during application to minimize or eliminate potential impacts. Actively treating known sites would provide weed free habitat and reduce competition.

The use of fire as a treatment could result in the loss of individuals or a community of special status plants. The impacts associated with treating noxious and invasive weeds with prescribed fire are directly linked to the intensity of the fire, the amount of area burned, and direct contact with individuals. If the intensity of the fire is light and only removes the surface elements of the plant leaving a viable root base intact, the impacts on some perennial species would be temporary, with certain species regenerating the following growing season. However, if the root of perennial plants or the seed bed of annual species is burned with high-intensity fire, the plants would be killed.

Impacts associated with manual and mechanical treatments are also variable. If the plant is driven over or stepped on, it is possible for the plant to rebound from the impact. If the plant is inadvertently pulled or cut off, the plant would likely be lost. Livestock grazing would be limited or restricted in areas of known special status species to prevent individual plants from being trampled or eaten. Biological treatments with insects or pathogens are usually specific to a single non-native plant species, and would not negatively impact special status plant species.

Implementation of SOPs and special design features, including surveying for species of concern if the project may impact special status species; minimizing direct impacts to species of concern from fire treatments, unless studies show that these species will benefit from fire; minimizing the use of ground-disturbing equipment near species of concern; using temporary roads when long-term access to treatment sites is not required; designating buffers around rare plants; managing herbicide drift; and managing timing of herbicide applications (BLM 2007a; Appendix C) would minimize the risks to special status plant species from weed treatments. Overall, successful weed treatments would benefit special status plant species by reducing competition to these species from noxious or invasive weeds.

4.2.5 Threatened/Endangered, Sensitive Animals

The BLM special status species within the CFO and SFO occur in a wide variety of habitats, many of which have the potential for weed infestations. Treatment of weed infestations within these habitats poses the risk of potential harm to these species, including the loss of some individual small animals from herbicide exposure. The PEIS contains a detailed analysis of impacts associated with different treatment methods on special status species (BLM 2007a; pg. 4-91 to 4-94). In general, impacts to wildlife, small mammals and avian species would be greatest where vegetation treatments are used most often and the potential for impacts is highest when large areas are treated.

An integrated weed control program would not be likely to affect the gray wolf, grizzly bear, Canada lynx, and yellow-billed cuckoo because their occurrence is rare within the CFO and SFO and/or their mobility would allow them to avoid or flee treatment areas. Treatment would indirectly benefit these species by reducing noxious and invasive weeds and increasing native habitat that provides forage areas for prey.

Additional herbicides approved for use under this alternative have been found to have less of an impact on wildlife than some of those currently being used by the BLM. The new herbicides would be effective in treating weed infestations within riparian areas, around live water, and upland areas which would benefit the special status species that utilize these habitats by restoring native vegetation. Use of these new herbicides would enhance treatment of cheatgrass, which increases fire frequency, replaces native species, and reduces habitat for some BLM sensitive species.

Possible direct adverse effects to individual animals include death, damage to vital organs, change in body weight, decrease in healthy offspring, and increased susceptibility to predation. Adverse indirect effects include reduction in plant species diversity, caused by the loss of non-target species, and consequent availability of preferred food, habitat, and breeding areas; decrease in species population densities within the first year following application as a result of limited reproduction; habitat and range disruption (as wildlife may avoid sprayed areas for several years following treatment), resulting in changes to territorial boundaries and breeding and nesting behaviors; and increase in predation of small mammals due to loss of ground cover. Overall adverse effects to populations due to herbicide use are expected to be minor. Amphibians such as the western toad would have the greatest chance of being affected, due to their permeable skin. However, individual animals are generally widely scattered across the landscape and would not usually be concentrated within an area of treatment. There is a risk of indirect impact to these species from ingesting herbicide while foraging, however, these impacts are anticipated to be low because herbicide spraying would be limited in riparian habitats.

Impacts associated with prescribed fire would be directly related to the intensity and extent of the fire. The use of fire could affect small individuals that tend to be limited to specific small and isolated habitats. Mechanical treatments would have similar impacts to fire while manual treatments are usually smaller in nature and would not likely disturb habitats or result in the direct loss of individuals.

Implementation of SOPs and special design features (Appendix C) would minimize the risks to special status wildlife species from weed treatments. Overall, successful weed treatments would benefit special status wildlife species by improving habitat.

4.2.6 Threatened/Endangered, Sensitive Fish

Treatment methods used as part of an integrated weed control program could potentially affect threatened/endangered and sensitive fish species. The hazards of different herbicides to aquatic organisms are analyzed in the PEIS (BLM 2007a; pg. 4-94). Risks to special status fish and aquatic invertebrate species would be minimized by following the SOPs in Appendix C and the PEIS (BLM 2007a; pg. 4-93 and 4-94), such as pre-treatment surveys and appropriate buffer zones between treatment areas and water bodies with special status fish and aquatic invertebrates. The risk analysis in the PEIS concluded that for realistic (typical) exposures, risks to aquatic species are low for all herbicides proposed for use.

Accidental direct spray or a chemical spill into a waterway could occur, but the probability of either event occurring is low. A spill or direct spray of herbicide into a waterway could result in a localized direct or indirect mortality of salmonids and other fish species, a reduction or loss of important riparian vegetation, or reduction in water quality. Effects to fish, such as direct mortality of individuals or a loss of macro-invertebrates that fish use as food could occur if herbicides were accidentally sprayed or spilled directly into water. Sublethal effects, such as altered behavior, stunted growth, reduced reproductive success, and physiological changes that make the organism more susceptible to environmental stresses (Spence et al. 1996), may occur at concentrations lower than those necessary to produce mortal effects. If non-target plants that bind sediment, protect banks and shade water were inadvertently killed by spraying weeds, fish habitat quality could potentially be reduced from a reduction or loss of streamside shading or stabilizing streambank vegetation.

The weed spraying procedures currently in place by the CFO and SFO would greatly reduce the potential for a chemical spill and because all treatment near water would be selective hand spraying, potential quantities spilled would be low. The potential effects to fish and fish habitat from the drift of chemicals into water would also be minimized due to established buffers in riparian areas and chemical application requirements that prohibit spraying under windy conditions. Combined with the guidelines for the types of chemicals that may be applied within riparian areas, this would be expected to prevent any adverse effects to fisheries resources or water quality from chemical drift. Design features and herbicide use constraints to protect riparian areas and fish habitat are listed in Appendix C.

Although fire has the potential to adversely affect aquatic habitats by removing overstory, increasing water temperatures, and degrading water quality, the potential for adverse affects would be minimized by SOPs that prohibit use in riparian areas. Mechanical methods are appropriate for vegetation treatments near water where a high level of control over vegetation removal is needed or the risks to aquatic habitats from the use of fire and herbicides are great. Manual treatments, which tend to be more selective and involve smaller treatment areas than other methods, would be more likely to be used in riparian areas and would be less likely to affect fisheries than the other methods. These treatments are especially effective in treating sensitive habitats or habitats that support sensitive fish species. Biological control using both insects and livestock would also reduce weeds in riparian zones as targeted wetland grazing has been shown to provide desirable plant response when applied under the right conditions.

Overall, weed treatment would result in beneficial impacts to fish and fish habitat. A reduction in weeds would indirectly protect watershed integrity and thus water quality and fish habitat by reducing the number of invasive species in riparian areas.

4.2.7 Water Quality – Surface

Weed treatments have the potential to affect surface water quality. Vegetation removal could affect surface water by increasing surface runoff, promoting erosion and sedimentation, reducing shading and increasing water temperature, and limiting the amount of organic debris entering water bodies (BPA 2000). Impacts to water quality from manual and biological (insect or pathogen) treatments would be minor and short-term, as soil disturbance would be minimal from manual treatments, and insects or pathogens do not generally kill host species rapidly enough to lead to extensive loss of vegetative cover. Biological treatments utilizing domestic grazing animals would follow SOPs outlined in Appendix C in order to protect riparian and surface water resources.

Mechanical treatments that cause soil disturbance have the greatest potential for negative impacts to water quality, particularly in locations adjacent to 303 (d) listed stream reaches where sediment has been identified as an instream pollutant. SOPs (Appendix C) would allow only limited mechanical treatments within riparian habitat conservation areas, as defined by PACFISH/INFISH (e.g., 300 feet on each side of the stream channel for fish-bearing streams and 150 feet on each side of the stream channel for permanently flowing non-fish-bearing streams). Before treating such areas, an ID Team would determine whether additional measures beyond the SOPs listed would be needed, to ensure that negative impacts are minimal and short-term.

Chemical use in riparian areas also has the potential to affect water quality. Treatment with chemicals would follow the SOPs and design features outlined in Appendix C. These measures would minimize the possibility of accidental contamination of water bodies by herbicide due to runoff, drift, misapplication/spills, and leaching. There is a possibility however that chemical or prescribed fire treatment of monotypic weed infestations such as cheatgrass in uplands adjacent to impaired stream reaches could have negative impacts on water quality due to additional sedimentation stemming from loss of vegetative cover. Effects would be minor and of short duration compared to the potential negative impacts of expanded cheatgrass cover on water quality, which would lead to a reduction in soil integrity (Norton et al. 2004) and increase in fire frequency. These treatment sites would be potential candidates for restoration if an ID Team determines it would be necessary to minimize negative impacts to water quality. Any additional disturbance related to restoration would be minor compared with the benefits of a more rapid re-establishment of vegetative cover.

The Proposed Action alternative would increase the range of herbicides available to BLM managers, The ability to use additional herbicides would allow more options in choosing herbicides to match treatment goals and application conditions. The long-term effects of weed treatments, particularly in 303(d) listed watersheds, would be beneficial to water quality. Reducing the number of acres degraded by weed infestations provides long-term benefits to water quality with the return of more stable soils, attenuated nutrient cycling, and return to normal fire cycles (BLM 2007a).

4.2.8 Wetlands/Riparian Zones (including uplands)

Integrated weed management would benefit wetland and riparian communities by decreasing the growth, seed production, and competitiveness of target plants, thereby releasing native species from competitive pressures and aiding in their reestablishment. The degree of benefit would depend on the success of the treatments over both the short and long term (BLM 2007b). In the short term, treatments leading to a reduction in vegetative cover could cause an increase in soil erosion and surface water runoff, which could lead to stream bank erosion and sedimentation in wetland/riparian zones (Ott 2000). Unintentional herbicide applications or accidental spills near wetland and riparian areas could be particularly damaging to wetland and riparian vegetation. Spray drift could also degrade water quality in wetland and riparian areas and could damage non-target vegetation (BLM 2007a). Spraying in riparian areas would follow the SOP design features and buffers outlined in Appendix C to minimize the possibility of accidental contamination of water bodies by herbicide due to runoff, drift, misapplication/spills, and leaching.

Impacts to wetland and riparian vegetation from manual treatments would be minor and short-term, with rapid recovery of non-target vegetation. Mechanical treatments may occur in riparian zones and would follow SOP design features and buffers in order to minimize impacts to healthy native vegetation. Biological treatments utilizing domestic grazing animals would follow SOPs outlined in Appendix C in order to protect riparian resources. Biological treatments by insect or pathogen would not affect non-target vegetation.

The Proposed Action alternative would increase the range of herbicides available to BLM managers, which would allow more options in choosing herbicides to match treatment goals and application conditions. This should beneficially affect riparian resources because potential negative impacts to non-target vegetation would be minimized and successful treatments would maintain healthy riparian systems by preventing weeds from displacing native vegetation and potentially increasing soil erosion and sedimentation. Using appropriate methods to treat known weed infestations to reduce the spread or density of populations would ensure stream functions are not impacted by targeted weed species.

4.2.9 General Wildlife and Fisheries

Integrated weed control has the potential to affect general wildlife and fisheries, particularly from treatments involving herbicides. Although herbicide use poses a potential risk to wildlife, the risk can be minimized by following SOPs. The PEIS contains SOPs (BLM 2007a; pgs. 4-98 and 4-99) designed to reduce potential unintended impacts to wildlife from the application of herbicides. These SOPs were taken into consideration when evaluating risks to wildlife from herbicide use. SOPs to lessen impact to fisheries are analyzed above in the Threatened/

Endangered, Sensitive Fish section and potential impacts to fisheries are the same as discussed in that section.

The extent of direct and indirect impacts to wildlife would vary by the effectiveness of herbicide treatments in controlling target plants and promoting the growth of native vegetation, as well as by the extent and method of treatment (e.g., aerial vs. ground) and chemical used (e.g., selective vs. non-selective), the physical features of the terrain (e.g., soil type, slope), and weather conditions (e.g., wind speed) at the time of application. The impacts of herbicide use on wildlife would depend directly on the sensitivity of each species to the particular herbicides used, the pathway by which the individual animal was exposed to the herbicide, and indirectly on the degree to which a species or individual was positively or negatively affected by changes in habitat. Aerial applications have the greatest potential to affect wildlife because they typically cover the largest treatment areas.

Impacts could include loss of non-target vegetation used by wildlife, and effects to wildlife health from exposure to herbicides. Possible direct adverse effects to individual animals from herbicides include death, damage to vital organs, change in body weight, decrease in healthy offspring, and increased susceptibility to predation. Adverse indirect effects include temporary reduction in plant species diversity and consequent availability of preferred food, habitat, and breeding areas; decrease in wildlife population densities within the first year following application as a result of limited reproduction; habitat and range disruption (as wildlife may avoid sprayed areas for several years following treatment), resulting in changes to territorial boundaries and breeding and nesting behaviors; and an increase in predation of small mammals due to loss of ground cover. Long-term positive impacts on wildlife communities would include improvements in habitat and ecosystem function.

Prescribed fire treatment could injure or kill animals; particularly those with limited mobility that live above ground. The eggs and young of birds – especially ground-nesting species – are susceptible to fire, making time of year an important variable in conducting prescribed burns. The nesting season often coincides with the active period of plant growth, when moisture conditions are too wet to sustain prescribed fires. The young of small mammals that build dens or nests near the ground, such as small rodents and hares, are also susceptible to fire. Wildlife that leave an area due to fire would likely return after the treatment if food or cover is available in the area.

Mechanical methods are effective in restoring wildlife habitat and are the primary means of reseeding a site. However, equipment is often noisy, and noise may alter animal behavior or cause wildlife to leave an area during the disturbance period. Manual treatments can be expensive, but they allow for more precise vegetation control than other methods and are often suitable in areas with sensitive wildlife species. Hand-held mechanical equipment creates noise that can disturb animals and cause them to flee or alter their behavior or habitat use. These effects would be short-term, and would not affect the long-term health and habitat use of wildlife in the treatment areas.

4.2.10 Existing and Potential Land Uses

Livestock grazing is a primary use of public land in the CFO and SFO. An integrated weed treatment program that successfully reduces the level of noxious weeds on rangelands would benefit livestock by increasing the quality of available forage and the number of acres suitable for grazing. All treatment types available under the Proposed Action alternative could potentially be used in grazing allotments. Soils could be disturbed by manual or mechanical treatments or by prescribed fire if it is selected for use. Some non-target plants in close proximity to weeds may be killed or damaged by herbicide drift, manual or mechanical treatments, or fire use. Both non-target plants and soils may be damaged or disturbed by the presence of weed control personnel. The minor short-term impacts from these control measures would be outweighed by the resource benefits stemming from weed removal. The potential short-term negative impact of weed treatment on allotment permittees would primarily stem from the possible need (depending on treatment type) to exclude livestock from treated areas for a certain period of time, for example following prescribed fire or reseeding. This should be offset by the long-term benefits of increased rangeland health and available livestock forage. The use of SOPs (including posting signs at herbicide treatment sites used by the public) would minimize human and animal health risks (Appendix C).

The Proposed Action alternative would increase treatment options and flexibility to best achieve treatment goals while minimizing risks to human and animal health. Use of the new herbicides authorized under the 2007 PEIS would result in improved control of targeted weeds. This would have a beneficial effect on land use by reducing weed competition with native vegetation, resulting in increased forage quality, palatability and availability.

4.2.11 Vegetation, Rangeland Resources

Treatments conducted as part of an integrated weed control program would predominantly affect rangeland as this type of land comprises the majority of the public lands within the CFO and SFO and is also the land type most susceptible to weed invasion as compared to higher elevation forest lands. All of the treatment methods available under the Proposed Action alternative have the potential to affect non-target vegetation. Non-target vegetation could be damaged or killed accidentally by manual treatment efforts when treating weeds that are in close proximity to non-target vegetation. This risk would be minimized by ensuring proper identification of target species. Impacts to non-target vegetation could occur from trampling or grazing by livestock; these would be reduced by following the SOPs listed in Appendix C. Successful biological treatments would not eradicate target species, but would apply enough pressure on species to reduce dominance to more acceptable levels. Risks due to biological agents would be minimal as agents released on public lands are permitted by APHIS following testing to ensure that they are host-specific and do not affect non-target species.

Herbicide and mechanical treatments and prescribed fire use pose the greatest risk to non-target vegetation. Potential plant mortality due to herbicide drift, runoff, wind transport, accidental spills and direct spraying, and mechanical or prescribed fire treatment methods would be minimized by following the SOPs and design features listed in Appendix C. The effectiveness of herbicide treatment on target plants and the extent of disturbance to native vegetation communities would vary by the extent and method of treatment (e.g., aerial vs. ground) and herbicide used (e.g., selective vs. non-selective), as well as by local plant types and physical features (e.g., soil type, slope) and weather conditions (e.g., wind speed) at the time of application. Treatments would likely affect plant species composition of an area and may or may not affect plant species diversity (BLM 2007a). Selective herbicides that target certain types of plants (for example, broadleaf species) while leaving others such as grasses unaffected have the greatest potential to impact species composition, both positively and negatively.

Use of four new herbicides would result in more options to best match treatment goals, terrain, and application conditions, and might therefore reduce overall risk to vegetation and increase positive ecosystem benefits from treatment. This would increase the CFO and SFO's capability to successfully manage cheatgrass and maintain healthy native perennial grass cover. The ability to employ the most technologically advanced herbicides would likely reduce risk to non-target plants and increase management benefits. The wider range of herbicides and herbicide types available to combat diverse weed species would minimize the chance that invasive species would become resistant to herbicides that are sprayed in the same location for several years.

Use of mechanical and prescribed fire treatments in conjunction with other treatments (including reseeding) would help to restore rangelands degraded by cheatgrass that have already sustained substantial loss of native perennial vegetation, and are at risk of conversion to annual grasslands with an altered fire regime that promotes further cheatgrass establishment (Pellant 1990). Fire use would cause mortality of fire-intolerant species (such as Wyoming big sagebrush) in the treatment area, and mechanical actions could damage any non-target vegetation found in the area. These potential adverse effects would be minor compared to the loss of native vegetation caused by continued cheatgrass expansion and associated increased fire risk. There may be short-term additional soil disturbance associated with restoration efforts, but potential negative impacts would likely be minor compared to the benefits of successful restoration.

Overall, the Proposed Action alternative would have a beneficial effect on native plant communities by decreasing the growth, seed production, and competitiveness of target weed species, thereby releasing native species from competitive pressures (e.g., water, nutrient, and space availability) and aiding in the reestablishment of native species (BLM 2007a).

4.2.12 Soils

Integrated weed control could potentially affect soils by altering their physical, chemical, and/or biological properties. Changes could include loss of soil through erosion due to short-term removal of vegetative cover or changes in soil structure, porosity, or organic matter content. Herbicide applications may result in contact with soils, either intentionally for systemic treatments, or unintentionally as spills, overspray, spray drift, or windblown dust. Contact may also occur as a result of herbicide transport through plants to their roots where herbicide may be released into soil (BLM 2007a). Mechanical treatments would disturb soil as an intrinsic part of the treatment, for example in order to prepare an area for reseeding following weed eradication. Prescribed fire also has the potential to disturb large areas of soil and require rehabilitation. Soil disturbance associated with manual treatments is likely to be minimal and would not require rehabilitation efforts due to the small area affected.

Treatments with the greatest potential for adverse short-term effects on soils include herbicide use on dense monotypic stands leading to substantial loss of vegetative cover, mechanical treatments, and prescribed fire. Following SOPs would minimize soil disturbance and prohibit potentially erosive actions in areas identified by field office resource specialists as containing highly erodible soils.

Over the long term, treatments that remove invasive vegetation and restore native plants should enhance soil quality on public lands (BLM 2007a). Studies have shown that sites dominated by spotted knapweed display substantially higher surface water runoff and stream sediment yield than comparable sites dominated by native perennial bunchgrasses (Lacey et al. 1989). Cheatgrass dominance and associated fires also reduce biological soil crusts, which affect nutrient cycling, water infiltration, and potential soil erosion (Belnap et al. 2001). The Proposed Action alternative would increase flexibility in treatment options particularly with regard to cheatgrass, and enable aerial spraying in terrain where ground-based methods are not feasible or economical.

4.2.13 Economic and Social Values

Implementation of an integrated weed control program would continue to maintain the current natural and economic values that contribute to the desirability of Custer and Lemhi counties as a place of residence for many inhabitants. Maintaining healthy native vegetation that provides wildlife and livestock forage and habitat as well as recreation values would have an indirect economic benefit to local communities dependent on ranching and tourism. A weed control program can also act as a source of local employment opportunities through BLM seasonal work and contracts issued for weed control projects.

Herbicide use and prescribed fire are the treatment options most likely to adversely impact economic and social values because public concerns regarding the use of herbicides and prescribed fire are greater than for other treatment options; mechanical, manual, or biological options would have negligible impacts. Potential health (human and animal) and environmental impacts of approved herbicide use were analyzed in the 2007 PEIS and determined to be insignificant with proper implementation of SOPs. More detailed information can be found in Appendix C (Human Health Risk Assessment) of the PEIS (BLM 2007a). In Custer and Lemhi counties, most human herbicide exposure is related to spraying on private lands (BLM 2003). The highest potential for public exposure from BLM treatment activities would occur during spraying at campgrounds. SOPs dictate that herbicide application at sites such as campgrounds be posted with signs warning of herbicide use. Potential negative impacts from prescribed fire use include smoke impacts on local residents, and the possibility of a fire escaping control. Following SOPs would enable managers to plan and conduct prescribed fires in such a manner as to minimize the possibility of these negative impacts.

The Proposed Action alternative would increase treatment options and flexibility in choosing herbicides that best match treatment goals and application conditions and will improve BLM’s ability to maintain and increase healthy and productive rangeland, providing increased social and economic benefits to residents of Custer and Lemhi counties.

4.2.14 Cumulative Impacts

The integrated weed control programs implemented by the CFO and SFO are components of the Custer, Lost River, and Lemhi County Coordinated Weed Management Area programs. Additional components include integrated weed management on USFS, State, and private lands. Private land owners are encouraged to control weeds, and many receive assistance from federal and county weed managers. The result of these coordinated efforts would provide greater success in containing and controlling weeds by setting area-wide priorities and ensuring that weed problems spanning administrative boundaries are targeted jointly.

The cumulative effects to human health and to the environment from herbicide spraying by the CFO and SFO, combined with other herbicide use in Custer and Lemhi counties, are expected to be minimal when SOPs listed in Appendix C are followed. SOPs for prescribed fire include smoke management practices that minimize the risk of adverse cumulative impacts.

The BLM and USFS manage local lands with goals to maintain and enhance natural resources, including mitigating actions that should be conducive to preventing or reducing weed infestations. Therefore implementation of the Proposed Action alternative in conjunction with other land management activities is expected to contribute to a decreased need to treat noxious weeds at site-specific locations in the future. Proper implementation and monitoring of all land management activities is expected to have a beneficial effect on the long-term control of noxious weeds.

The potential impact on the CFO and SFO's ability to implement long-term noxious weed control from activities that take place on private lands is unknown. It is reasonable to expect that the cumulative effects of private land management activities, as with other federal and state activities, would be as varied as the landowners and the lands being managed. However, in the absence of cooperative agreements between federal/state and private landowners, it is expected that activities on private lands, particularly on lands upstream, adjacent, and intermingled with public lands, would continue to present challenges to weed management for the CFO and SFO.

Long-term increases in atmospheric concentrations of carbon dioxide and consequent alterations in climate (global warming) could potentially increase local need for effective weed treatments. Changes in climate increase the risk of invasion by non-native species that are already adapted to changed climate conditions due to conditions at their place of origin, compared to native vegetation that may be at a competitive disadvantage in needing to adapt to different temperature/moisture regimes. Additionally, research has shown that many weeds, including Canada thistle, leafy spurge, and spotted knapweed, exhibit above average increased growth in response to elevations in carbon dioxide levels (Ziska 2003), potentially increasing their future competitiveness.

4.3 No Action Alternative

The No Action alternative would continue herbicide use and other treatment methods presently authorized for each of the field offices; prescribed burning of cheatgrass would not be authorized in the SFO. Under this alternative, the BLM would continue use of the active ingredients previously approved under the 1991 EIS but would not use the four new herbicides approved in the 2007 PEIS. Aerial application of herbicides would not be available as a treatment option. As the No Action alternative would be a continuation of current vegetation treatment practices, impacts to vegetation would be similar in nature to those that have occurred in the past. Invasive plant populations would likely continue to expand at the current rate or more quickly, increasing damage to native plant communities and inhibiting ecosystem functions. Long-term benefits to plant communities (i.e., eradication of unwanted vegetation and resulting improvements in ecosystems) would be less under this alternative (BLM 2007a). In particular, this alternative would result in a reduced capability to successfully treat cheatgrass compared to the Proposed Action alternative, leading to increased cheatgrass dominance and associated negative alterations to natural fire regimes.

4.3.1 Areas of Critical Environmental Concern

Impacts from treatments other than herbicide use would be similar to those described for the Proposed Action alternative. However, herbicide treatments could be less effective under this alternative. BLM managers would not have the capacity to use the most technologically advanced herbicides that may be best suited to a particular management situation and provide improved control of weeds while minimizing potential negative impacts to ACEC values.

4.3.2 Invasive, Non-native Species

Impacts from treatments other than herbicide use under the No Action alternative would be similar to those described for the Proposed Action alternative. However because BLM managers would not be authorized to use the four new herbicides approved by the 2007 PEIS, this alternative would likely result in reduced success in treating certain weeds with herbicides, particularly cheatgrass. Herbicide treatments currently available for treating cheatgrass are less selective and negatively impact native perennial grasses more than imazapic, one of the four new herbicides authorized under the Proposed Action alternative. The smaller number of available herbicides would increase the chance that invasive species would become resistant to herbicides that are sprayed in the same location for several years. In addition, the inability to treat cheatgrass with prescribed fire in the SFO would further reduce potential success in treating these species. Inability to use aerial applications would also reduce the effectiveness of treating large or remote infestations.

4.3.3 Migratory Birds

Weed management methods utilized under the No Action alternative would result in impacts to migratory birds similar to those described for the Proposed Action alternative, with the exception of herbicide use. Long-term positive impacts on migratory birds would include improvements in habitat and ecosystem function, but these would be less under this alternative than under the proposed alternative because some of the more effective herbicides would not be available for use. Because BLM would have fewer treatment options related to herbicide use, some invasive plant populations could expand, increasing damage to native plant communities and migratory bird habitat and inhibiting ecosystem functions associated with those communities. This would be particularly true for communities affected by cheatgrass infestations, against which the current suite of herbicides is less effective.

4.3.4 Threatened/Endangered, Sensitive Plants

Continuation of the existing weed treatment program under the No Action alternative would result in a benefit to special status plant species and other effects similar to those described for the Proposed Action alternative, with the exception of herbicide use and aerial application. Reducing competition to these species from noxious or invasive weeds would help to promote the viability of special status plant species. Treatment of noxious and invasive weeds poses a risk to special status plants, resulting in death of individuals or small population as a result of herbicide drift from treatment areas and disturbance associated with manual treatments (i.e., soil compaction, ground disturbance, and accidental pulling of individuals).

Continued roadside herbicide spraying may affect sensitive species that occur along roadways and in disturbed areas. Prior to chemical applications near sensitive plant sites, plant inventories would be conducted and sensitive species marked to reduce the chance of accidental herbicide application. Ensuring these known sites are actively treated for exotic species would provide for weed free habitat with minimal competition. Not using aerial application would reduce potential for adverse affects to sensitive plants through incidental drift.

4.3.5 Threatened/Endangered, Sensitive Animals

Effects to BLM special status wildlife species within the field offices would be similar to those described for the Proposed Action alternative, with the exception of herbicide use. Continuing to follow the current weed management practices under the No Action alternative would not be likely to affect the gray wolf, grizzly bear, and Canada lynx within the CFO or SFO. These species and their prey base are primarily found in areas that are not associated with weedy species; are not common in the field office areas, and would likely avoid areas undergoing treatment. Treatment of infestations would indirectly benefit ESA-listed species by increasing native habitat areas within the field offices that provide forage areas for prey. Treatment of potential yellow-billed cuckoo habitat within riparian areas would benefit this species by increasing habitat availability within the field offices even though occurrence of the species is rare in the area.

4.3.6 Threatened/Endangered, Sensitive Fish

Impacts to threatened/endangered and sensitive fish species would be similar to those described for the Proposed Action alternative, with the exception of herbicide use and aerial application. Under this alternative the range of herbicides available to BLM managers would not be expanded to new herbicides that would allow more options to match treatment goals and application conditions. Without these options the BLM would not be authorized to use newly approved herbicides that could pose less risk to wetlands, riparian areas, water quality, and fish species than currently used herbicides. Not using aerial application would reduce potential for adverse affects through incidental drift.

4.3.7 Water Quality – Surface

Impacts to surface water quality as a result of weed management methods utilized under the No Action alternative would be similar to those described for the Proposed Action alternative, with the exception of herbicide use and aerial application. There would be fewer options in choosing herbicides to provide satisfactory weed control while maintaining healthy native vegetation communities. There would also be reduced capability for upland cheatgrass treatments using herbicides, possibly leading to larger areas dominated by cheatgrass and potentially causing watershed degradation due to increased soil erosion and altered fire regime, especially in 303(d) impaired watersheds. Not using aerial application would reduce potential for adverse affects through incidental drift.

4.3.8 Wetlands/Riparian Zones (including uplands)

Weed management methods utilized under the No Action alternative would result in impacts similar to those described for the Proposed Action alternative, with the exception of herbicide use and aerial application. Impacts to wetlands/riparian zones under this alternative would potentially be greater, because it would reduce the BLM managers' ability to satisfactorily treat weeds in riparian areas while minimizing impacts to native riparian vegetation. Not using aerial application would reduce potential for adverse affects through incidental drift.

4.3.9 General Wildlife and Fisheries

Continuation of the existing weed treatment program under the No Action alternative would result in effects to general wildlife and fisheries similar to those described for the Proposed Action alternative, with the exception of herbicide use and aerial application. The No Action alternative would not allow the use of newly approved herbicides that have less impact to terrestrial animals and fish species (BLM 2007a; pg. 4-101 to 4-109), possibly resulting in an increased risk if currently approved herbicides with greater risk of negative impacts continued to be used instead, as well as decreasing the possibilities of more effective habitat and native ecosystem improvements. Not using aerial application would reduce potential for adverse affects through incidental drift.

4.3.10 Existing and Potential Land Uses

Weed management methods utilized under the No Action alternative would result in impacts to land use similar to those described for the Proposed Action alternative, with the exception of herbicide use. This alternative would likely provide fewer potential benefits to allotment permittees because there would be fewer options for herbicides that provide successful weed control while maintaining healthy native vegetation communities and minimizing risks to human health and grazing livestock. This could potentially compromise the ability to use best available treatment methods on weeds known to be potentially injurious to humans, such as leafy spurge; or toxic to certain grazing animals, such as hound’s tongue and Russian knapweed.

4.3.11 Vegetation, Rangeland Resources

Weed management methods utilized under the No Action alternative would result in impacts to vegetation similar to those described for the Proposed Action alternative, with the exception of herbicide use and aerial application. This alternative would likely result in reduced success in treating weeds with herbicides due to the inability to use newer more efficient herbicides authorized by the 2007 PEIS. This could reduce the ability of the CFO and SFO to effectively treat rangeland weeds, particularly cheatgrass, compared to the Proposed Action alternative. Not using aerial application would reduce potential for adverse affects through incidental drift.

4.3.12 Soils

Weed management methods utilized under the No Action alternative would result in impacts to soils similar to those described for the Proposed Action alternative, with the exception of those occurring from herbicide use. This alternative would likely provide fewer potential benefits to soil resources, due to a narrower range of herbicides available. There would be fewer options in choosing herbicides to provide satisfactory weed control while maintaining healthy native vegetation communities. There would also be reduced capability for cheatgrass treatments using herbicides, possibly leading to larger areas dominated by cheatgrass. Cheatgrass expansion is associated with loss of biological crust, increased soil erosion, and altered fire regimes. More frequent fire and loss of native perennial vegetation would further increase the risk of soil erosion.

4.3.13 Economic and Social Values

Weed management methods utilized under the No Action alternative would result in impacts to economic and social values similar to those described for the Proposed Action alternative, with the exception of herbicide use. This alternative would likely result in reduced success in treating weeds with herbicides, due to the lack of ability to use newer more efficient herbicides as they become available, including the four authorized by the 2007 PEIS. Weed infestations, including cheatgrass, have negative impacts on rangeland forage quantity and quality, and loss of wildlife forage also negatively impacts local residents' way of life. Therefore this alternative would likely provide fewer potential economic and social benefits.

4.3.14 Cumulative Impacts

Weed management methods utilized under the No Action alternative would result in cumulative impacts similar to those described for the Proposed Action alternative, with the exception of herbicide use and prescribed fire use in the SFO. Under this alternative, the BLM would continue use of the active ingredients previously approved under the 1991 EIS but would not use the four new herbicides approved in the 2007 PEIS. Effectiveness of treatment of cheatgrass would be reduced in the SFO due to the inability to use prescribed fire as a treatment method. The CFO and SFO would continue to participate in cooperative weed management efforts with USFS, county, and private partners but with reduced effectiveness. It is likely that future size and densities of weed infestations on public lands would be greater under this alternative, which would potentially impact adjoining landowners and necessitate increased expenditure of resources in future treatment efforts.

4.4 No Aerial Herbicide Application Alternative

This alternative is similar to the Proposed Action alternative in that it includes the same methods for the treatment of weeds including all of the herbicides approved for use in the 2007 PEIS. Under this alternative, however, only ground-based techniques would be used to apply herbicides (i.e., no aerial applications of herbicides would be permitted). Although the majority of herbicide treatments anticipated during the next 10 years would involve use of ground-based methods, because this alternative would not allow aerial application the number of acres treated could potentially be reduced. Large, remote, or difficult to access areas cannot be effectively treated by ground application methods. This alternative would result in fewer impacts to non-target vegetation from off-site drift compared to the Proposed Action alternative, as aerial application is a primary cause of off-site drift (BLM 2007a). However it is likely that long-term positive effects on desired plant communities and ecosystems from aerial treatments would be greater than any potential short- term negative effects that would result from aerial application of herbicides in appropriate areas. Direct and indirect impacts from other vegetation treatment options (i.e., mechanical, prescribed fire) might also increase if these methods were used more extensively to compensate for the reduced number of acres treated by herbicides. This alternative would reduce the BLM's ability to effectively treat large expanses of invasive species if other herbicide application methods (e.g., backpack, horse, ATV, truck) were not feasible (BLM 2007a) due to difficulty of access or the size of the area needing treatment.

4.4.1 Areas of Critical Environmental Concern

Weed management methods utilized under this alternative would result in similar impacts to those described for the Proposed Action alternative, with the exception of those occurring from aerial herbicide use. Large, remote, or difficult to access areas can not be effectively treated by ground application methods (BLM 2007a). This alternative would likely result in fewer acres treated and reduced capability to successfully control large or remote weed infestations and promote the reestablishment of healthy native vegetation communities.

4.4.2 Invasive, Non-native Species

Weed management methods utilized under this alternative would result in similar impacts to those described for the Proposed Action alternative, with the exception of those occurring from aerial herbicide use. Although the majority of herbicide treatments during the next 10 years would likely involve use of ground-based methods, the SFO has identified several areas where aerial application would potentially be the most effective means of treating weeds. Large, remote, or difficult to access areas can not be effectively treated by ground application methods (BLM 2007a). This alternative would likely result in fewer acres treated and reduced capability to successfully control large or remote weed infestations and promote the reestablishment of healthy native vegetation communities.

4.4.3 Migratory Birds

Impacts associated with this alternative would be similar to those analyzed for the Proposed Action alternative. Migratory birds usually do not occur in areas where there are extensive infestations that would require aerial herbicide application. Aerial herbicide application would not be permitted in riparian areas where many of the migratory species nest and roost (see Appendix C).

4.4.4 Threatened/Endangered, Sensitive Plants

Elimination of aerial application would potentially have less impact on threatened, endangered, or sensitive plants than actions associated with the Proposed Action alternative. By removing aerial application methods, there would be less chance of over spray or drift which could impact special status plant species. However, stipulations and application SOPs would prevent the use of aerial application in areas containing special status species. Therefore, even though there is the potential for fewer impacts associated with the No Aerial Herbicide Application alternative, the differences between this alternative and the Proposed Action alternative are negligible.

4.4.5 Threatened/Endangered, Sensitive Animals

Impacts to special status animal species from implementation of this alternative are similar to those presented for the Proposed Action alternative. By not using aerial herbicide application there is a reduced chance of individuals being inadvertently sprayed with herbicide. Generally individuals will flee from the presence of machinery and humans when possible. The implementation of SOPs associated with weed treatment would minimize impacts to special status species.

4.4.6 Threatened/Endangered, Sensitive Fish

Impacts to threatened/endangered and sensitive fish would be the same as those presented under the Proposed Action alternative. This is because aerial application would not be used near water due to inability to control or prevent herbicide from coming into contact with water (see Appendix C for details of riparian buffers by treatment type).

4.4.7 Water Quality – Surface

Weed management methods utilized under this alternative would result in similar impacts to those described for the Proposed Action alternative, with the exception of those occurring from aerial herbicide application. Benefits to watersheds from large-scale herbicide treatments would not occur if aerial application was the only feasible method of treatment because these areas would not be as effectively treated under this alternative. Risk of herbicide drift that could potentially contaminate off-site bodies would be lower under this alternative than under the Proposed and No Action alternatives, but overall this would be out-weighed by the potential increase in negative impacts to water quality caused by extensive weed infestations (for example, increase in erosion and sedimentation).

4.4.8 Wetlands/Riparian Zones (including uplands)

The direct impacts of this alternative would be identical to those listed for the Proposed Action alternative because aerial application of herbicides would not be used in riparian areas and wetlands (see Appendix C).

4.4.9 General Wildlife and Fisheries

Impacts to general wildlife and fish species would be similar to those described for the Proposed Action alternative. The same types of herbicides presented for use in the Proposed Action Alternative would be used in association with this alternative resulting in similar impacts to wildlife and fishery species. The elimination of aerial herbicide application would lessen the possibility of individuals being inadvertently sprayed with herbicide. The use of ground based herbicide use and other weed treatment strategies would allow individuals to flee from or avoid weed treatment areas or personnel.

4.4.10 Existing and Potential Land Uses

Weed management methods utilized under this alternative would result in similar impacts to those described for the Proposed Action alternative, with the exception of those occurring from aerial herbicide application. Although the majority of herbicide treatments during the next 10 years would likely involve use of ground-based methods, the SFO has identified several areas where aerial application would potentially be the most effective means of treating weeds. This alternative would likely provide fewer potential benefits to allotment permittees if large-scale weed infestations remained untreated, or were less-effectively treated by ground-based methods.

4.4.11 Vegetation, Rangeland Resources

Weed management methods utilized under this alternative would result in similar impacts to those described for the Proposed Action alternative, with the exception of those occurring from aerial herbicide application. Although the majority of herbicide treatments during the next 10 years would likely involve use of ground-based methods, the SFO has identified several areas of rangeland where aerial application would potentially be the most effective means of treating weeds. In remote or areas of large infestation where aerial application is the only feasible option for treatment, this alternative would lead to continued displacement by weeds of native vegetation communities. This alternative would reduce the risk of off-site drift to non-target vegetation, so that impacts to non-target vegetation would be less than under the Proposed Action alternative.

4.4.12 Soils

Weed management methods utilized under this alternative would potentially cause greater negative impacts to soils if it resulted in increased use of ground-based treatment methods, which by their nature lead to greater soil disturbance than aerial application methods. Although the majority of herbicide treatments during the next 10 years would likely involve use of ground-based methods, this alternative could result in fewer acres treated if it unfeasible to treat areas that have been identified for aerial application via other methods. Weeds would continue to negatively impact soil resources in untreated areas.

4.4.13 Economic and Social Values

Weed management methods utilized under this alternative would result in impacts to economic and social values similar to those described for the Proposed Action alternative, with the exception of aerial herbicide application. Although the majority of herbicide treatments during the next 10 years would likely involve use of ground-based methods, this alternative would result in fewer acres treated. Weed infestations have negative impacts on rangeland forage quantity and quality, and loss of wildlife forage also negatively impacts local residents' way of life. Therefore this alternative would result in fewer potential economic and social benefits.

4.4.14 Cumulative Impacts

Weed management methods utilized under this alternative would result in cumulative impacts similar to those described for the Proposed Action alternative, with the exception of aerial herbicide application. Although the majority of herbicide treatments during the next 10 years would likely involve use of ground-based methods, this alternative would result in fewer acres treated if areas identified for aerial application were too difficult to access or too large to effectively treat by ground methods in which case these acres could go untreated. There would be fewer potential impacts due to off-site herbicide drift than under the other treatment alternatives. The CFO and SFO would continue to participate in cooperative weed management efforts with USFS, county, and private partners but with reduced effectiveness compared to the Proposed Action alternative. Future weed infestations on public lands would be greater under this alternative, which would potentially impact adjoining landowners and necessitate increased expenditure of resources in future treatment efforts.

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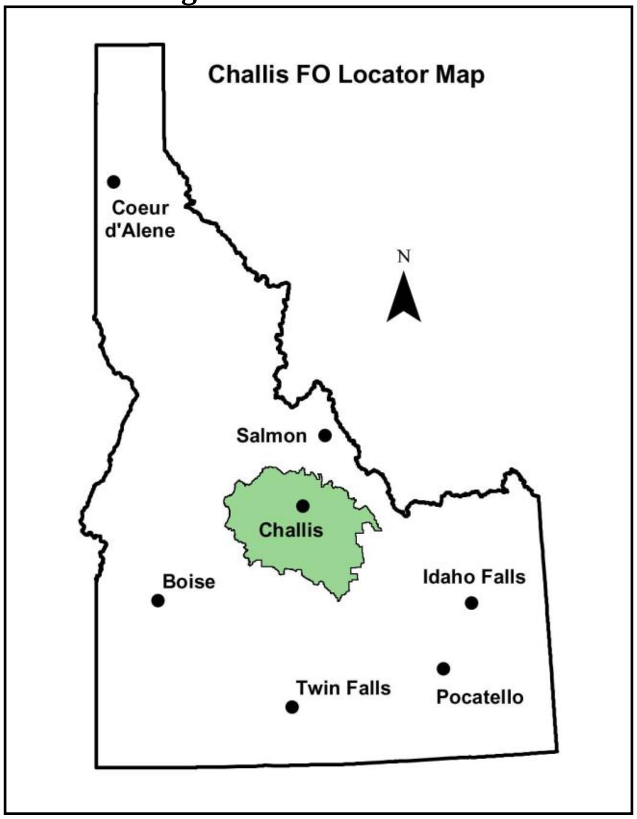
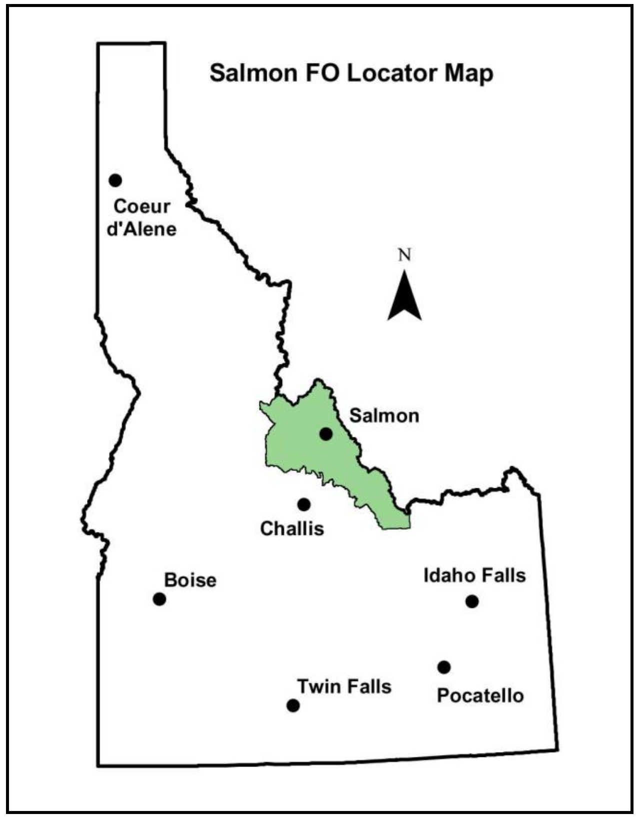
APPENDIX A
Map Reference Data

Location Diagrams





Source Statement

All Cities/County Seats developed from 1:100,000 or smaller data from Idaho Department of Lands, Bureau of Land Management, and United States Forest Service, 200301.

All BLM Field Office/District Boundaries developed by the Bureau of Land Management Idaho State Office from 1:24,000 data sources, 20060724.

Major Roads from the Bureau of Land Management Idaho State Office.

County Boundaries from Idaho Department of Water Resources 1:100,000 data, 1990.

Land Status (or "land ownership") from the Bureau of Land Management Idaho State Office, 20061101. Lands displayed as State of Idaho include lands with land status of State, State Fish & Game. Lands displayed as Bureau of Land Management include lands with land status of BLM. Lands displayed as Forest Service include lands with land status of USFS.

Wetlands and Riparian Areas developed from Challis Covertypes and Salmon Covertypes from Bureau of Land Management Challis and Salmon Field Offices.

BLM Wilderness Study Areas from Bureau of Land Management Idaho State Office 1:24,000 data, 19991101.

Idaho State Boundary from University of Idaho Library 1:100,000 data, 20000101.

Areas of Critical Environmental Concern from Bureau of Land Management Idaho State Office, 20060530.

Organization
U.S. Department of the Interior
Bureau of Land Management
Challis Field Office
1151 Blue Mountain Road Challis, Idaho 83226 (208)879-6200
Salmon Field Office
1206 South Challis Street Salmon, Idaho 83467 (208)756-5400

Date
2008

Disclaimers
No warranty is made by the Bureau of Land Management (BLM) for use of this data for purposes not intended by BLM. BLM does not warranty the accuracy, reliability, or completeness of this data for individual use or aggregate use with other data.
The surface management status ("land ownership") should be used as a general guide only. Official land records, located at the Bureau of Land Management (BLM) and other offices, should be checked for up-to-date information concerning any specific tract of land. Roads crossing public lands may be used unless closed by signs or notice by the land management agency. Public lands surrounded by private land may not be accessible. Permission is required from private landowner to cross private land, unless access is provided by a Federal, State or County road, or a BLM road with legal access.

APPENDIX B
Herbicides and Surfactants Approved for Use on BLM Rangelands in Idaho

The table below lists the approved herbicides that may be used on BLM-administered lands in Idaho at this time and their general affects to vegetation. The list includes the four new herbicides approved for use in the 2007 PEIS and included in this analysis: diflufenzopyr plus dicamba, diquat, fluridone, and imazapic. Under the action alternatives, the BLM would also be able to use diflufenzopyr as a stand-alone active ingredient at such time as the ingredient becomes registered for use by the EPA under the Federal Insecticide, Fungicide and Rodenticide Act. Trade names displayed in the table below are provided for informational purposes. Their identification does not preclude the use of additional trade names for approved active ingredients as they become commercially available.

Active ingredients are defined as the chemical or biological component that kills or controls the target weed, and formulation is the commercial mixture of both active and inactive ingredients (BLM 2007a). Herbicide formulations are often used in conjunction with adjuvants and surfactants. These are spray solution additives, and are considered to be any product added to an herbicide solution to improve the performance of the spray mixture. Examples of adjuvants include compatibility agents (used to aid mixing two or more herbicides in a common spray solution), drift retardants (used to decrease the potential for herbicide drift), suspension aids (used to aid mixing and suspending herbicide formulations in solution), spray buffers (used to change the spray solution acidity), and surfactants. Surfactants are a type of adjuvant designed to improve the dispersing/emulsifying, absorbing, spreading, sticking and penetrating properties of the spray mixture (Miller et al. 1996).

Active Ingredient	Trade Names	General Effects to Vegetation
Bromacil	Hyvar X; Hyvar XL	Bromacil is a non-selective, "broad spectrum" systemic herbicide, which is most effective against annual and perennial weeds, brush, woody plants, and vines. Poses high risk to non-target species in the immediate area of treatment.
Bromacil + Diuron	Krovar I DF; DiBro 2+2; Weed Blast 4G; DiBro 4+2; DiBro 4+4	See Bromacil description of effects above for affects of this chemical. Diuron is a non-selective, broad-spectrum herbicide, effective as both pre- and post-emergent.
Chlorsulfuron	Telar DF	A selective herbicide used on perennial broadleaf weeds and grasses.
Clopyralid	Reclaim; Stinger; Transline	A selective post-emergence herbicide used to control broadleaf weeds.
2,4-D Clopyralid +	Curtail	See *2,4-D* and *Clopyralid* for effects of these chemicals.
2,4-D	Agrisolution 2,4-D LV6; Agrisolution 2,4-D Amine 4; Agrisolution 2,4-D LV4; 2,4-D Amine 4; 2,4-D LV 4; Solve 2,4-D; 2,4-D LV 6; Five Star; D-638; Aqua-Kleen; 2,4-D LV6; 2,4-D Amine; Opti-Amine; Aqua-Kleen; Esteron 99C;	2,4-D is a plant growth regulator and acts as a synthetic auxin hormone. Broad-leaved plants are more susceptible than narrow-leaved plants like grasses.

	Weedar 64; Weedone LV-4; Weedone LV-4 Solventless; Weedone LV-6; Hi-Dep; Formula 40; 2,4-D LV 6 Ester; 2,4-D 4 Amine IVM; Weedstroy AM-40; 2,4-D Amine; Barrage LV Ester; 2,4-D LV4; Clean Crop Amine 4; 2,4-D LV6; Clean Crop Low Vol 6 Ester; Salvo LV Ester; 2,4-D 4# Amine Weed Killer; Clean Crop LV-4 ES; Savage DF; Cornbelt 4 lb. Amine; Cornbelt 4# LoVol Ester; Cornbelt 6# LoVol Ester; Amine 4; Lo Vol-6 Ester ; Lo Vol-4	
Dicamba	Dicamba DMA; Clarity; Vanquish; Diablo; Veteran CST; Veteran 10G	A growth-regulating herbicide readily absorbed and translocated from either roots or foliage. This herbicide produces effects similar to those found with 2,4-D.
Dicamba + 2,4-D	Outlaw; Range Star; Weedmaster; Veteran 720	See *Dicamba* and 2,4-D for effects of these chemicals.
Diflufenzopyr*	This active ingredient is approved as a formulation with dicamba and is labeled as Distinct® and Overdrive®, but cannot be used as a stand-alone active ingredient by the BLM until it is registered with the EPA.	Diflufenzopyr, which is used in combination with dicamba for weed control, is a postemergent that inhibits the transport of auxin in the plant resulting in an abnormal accumulation of auxin or auxin-like compounds in the growing points of susceptible plants and an imbalance in growth hormones in the plant. Works well on broadleaf weeds.
Diquat*	Reward, Diquat, Midstream, Reglone	Diquat is a post-emergence, nonselective herbicide that can be applied directly to vegetation or to ponds, lakes, or drainage ditches for the management of aquatic weed species. Diquat is a cell membrane disrupter whose mode of action intercepts electrons from photosynthesis and transfers the energy from photosynthesis to various free radicals that damage cell membranes.
Diuron	Diuron 80DF; Karmex DF; Direx 80DF; Direx 4L; Direx 4L-CA; Diuron-DF; Diuron 80WDG	Diuron is a non-selective, broad-spectrum herbicide, effective both pre- and post-emergence.
Fluridone*	Avast, Sonar	Fluridone is a systemic, selective, aquatic herbicide that can be applied to the water surface or subsurface, or as a bottom application just above the floor of the water body. Fluridone is absorbed from the water by the plant shoots and taken up from the soil by the roots. In susceptible plants, fluridone inhibits the formation of carotene, which is essential in maintaining the integrity of chlorophyll.
Glyphosate	Aqua Star; Forest Star; Gly Star Original; Gly Star Plus; Gly Star Pro; Glyfos; Glyfos PRO; Glyfos Aquatic; ClearOut 41; ClearOut 41 Plus; Accord SP; Glypro; Glypro Plus; Rodeo; DuPont Glyphosate; DuPont Glyphosate VMF; Aquamaster; Roundup Original; Roundup Original II; Roundup Original II CA; Honcho; Honcho Plus; Roundup Pro; Roundup RT;	A nonselective systemic herbicide that can damage all groups or families of non-target plants to varying degrees.

	GlyphoMate 41; Aqua Neat; Foresters; Razor; Razor Pro; Rattler; Mirage; Mirage Plus	
2,4-D Glyphosate +	Landmaster BW; Campaign; Landmaster BW	See *2,4-D* and *Glyphosate* for effects of these chemicals.
Dicamba Glyphosate +	Fallowmaster	See *Dicamba* and *Glyphosate* for effects of these chemicals.
Hexazinone	Velpar ULW; Velpar L; Velpar DF; Pronone MG; Pronone 10G; Pronone 25G; Pronone Power Pellet	A foliar-or soil-applied herbicide with soil activity. It is used for broadleaf weed, brush, and grass control in non-cropland and in forest lands.
Imazapic*	Plateau	This is a selective, systemic herbicide that can be applied both pre-emergence and post-emergence for the management of selective broadleaf and grassy plant species. Its mode of action is associated with the synthesis of branch-chained amino acids.
Imazapyr	Arsenal Railroad Herbicide; Chopper; Arsenal Applicators Concentrate; Arsenal; Arsenal Technical; Stalker; Habitat; SSI Maxim Arsenal 0.5G	This broad-spectrum herbicide can be applied pre or postemergence to weeds. Stable for at least 18 months. Kills plants within two to four weeks with residual activity. It is currently registered for use in non-crop areas such as industrial sites and rights-of-ways.
Imazapyr + Diuron	TopSite; Sahara DG; SSI Maxim Topsite 2.5G	See *Imazapyr* and *Diuron* for effects of these chemicals.
Metsulfuron methyl	Escort; Escort XP; Patriot; Cimarron	Metsulfuron methyl is a selective herbicide used pre- and post-emergence in the control of many annual and perennial weeds and woody plants.
Picloram	Tordon K; Tordon 22K; Grazon PC	Picloram is a selective herbicide used on broadleaf and woody plants .
2,4-D Picloram +	Tordon 101M; Tordon 101 R Forestry; Pathway; Grazon P+D; Tordon RTU	See *2,4-D* and *Picloram* for effects of these chemicals.
Sulfometuron Methyl	Oust**; Oust XP; Spyder	Broad-spectrum herbicide with preemergence and postemergence activity. It is phytotoxic at very low rates.
Tebuthiuron	Spike 20P; Spike 80W; Spike 1G; Spike 40P; Spike 80DF; SpraKil S-5 Granules	A soil-applied herbicide used for control of woody plants and vegetation. Tebuthiuron has a two to four rear residual on dry sites depending on application rates.
Tebuthiuron + Diuron	SpraKil SK-13 Granular; SpraKil SK-26 Granular	See *Tebuthiuron* and *Diuron* for effects of these chemicals.
Triclopyr	Garlon 3A; Garlon 4; Remedy; Pathfinder II; Tahoe 4E; Tahoe 3A	A growth-regulating herbicide for control of woody and broadleaf perennial weeds in non-cropland, forest lands, and lawns.
Triclopyr + 2,4-D	Crossbow	See *Triclopyr* and *2,4-D* for effects of these chemicals.
Triclopyr + Clopyralid	Redeem	See *Triclopyr* and *Clopyralid* for effects of these chemicals.

*These represent the new herbicides approved in the 2007 PEIS.
**The use of Oust is currently suspended on all public lands in Idaho per Instruction Memorandum ID-2001-050.

The following table lists currently approved additives and adjuvants (i.e., ingredients that improve herbicide effectiveness) available for use on BLM-administered lands in Idaho. As other formulations of these chemicals become available and are cleared through the BLM Washington Office, they will be considered for use on public lands. The list was most recently updated on Spetember 28, 2007, but is subject to future updates.

Type	Product Name	Company	EPA Registration Number
Surfactant			
Non-ionic	Agrisolutions Preference	Agriliance, LLC.	WA Reg. No. 1381-50011
Non-ionic	Aqufact	Aqumix, Inc.	NA
Non-ionic	Brewer 90-10	Brewer International	NA
Non-ionic	Baron	Crown (Estes Incorporated)	NA
Non-ionic	N.I.S. 80	Estes Incorporated	NA
Non-ionic	Spec 90/10	Helena	NA
Non-ionic	Optima	Helena	CA Reg. No. 5905-50075-AA
Non-ionic	Induce	Setre (Helena)	CA Reg. No. 5905-50066-AA
Non-ionic	Actamaster Spray Adjuvant	Loveland Products Inc.	WA Reg. No. 34704-50006
Non-ionic	Actamaster Soluble Spray Adj.	Loveland Products Inc.	WA Reg. No. 34704-50001
Non-ionic	Activator 90	Loveland Products Inc.	CA Reg. No. 34704-50034-AA
Non-ionic	LI-700	Loveland Products Inc.	CA Reg. No. 34704-50035 WA Reg. No. AW36208-70004
Non-ionic	Spreader 90	Loveland Products Inc.	WA Reg. No. 34704-05002-AA
Non-ionic	UAP Surfactant 80/20	Loveland Products Inc.	NA
Non-ionic	X-77	Loveland Products Inc.	CA Reg. No. 34704-50044
Non-ionic	Red River 90	Red River Specialties, Inc.	NA
Non-ionic	Cornbelt Premier 90	Van Diest Supply Co.	NA
Non-ionic	Spray Activator 85	Van Diest Supply Co.	NA
Non-ionic	R-900	Wilbur-Ellis	NA
Non-ionic	Super Spread 90	Wilbur-Ellis	WA Reg. No. AW-2935-70016
Non-ionic	Super Spread 7000	Wilbur-Ellis	CA Reg. No. 2935-50170 WA Reg. No. AW-2935-0002
Non-ionic	Red River 90	Red River Specialties, Inc.	NA
Spreader/Sticker	Agri-Trend Spreader	Agri-Trend	NA
Spreader/Sticker	TopFilm	Biosorb, Inc.	NA
Spreader/Sticker	Bind-It	Estes Incorporated	NA
Spreader/Sticker	Surf-King PLUS	Crown (Estes Incorporated)	NA
Spreader/Sticker	CWC 90	CWC Chemical, Inc.	NA
Spreader/Sticker	Cohere	Helena	CA Reg. No. 5905-50083-A
Spreader/Sticker	Attach	Loveland Products Inc.	CA Reg. No. 34704-50026
Spreader/Sticker	Bond	Loveland Products Inc.	CA Reg. No. 36208-50005
Spreader/Sticker	Tactic	Loveland Products Inc.	CA Reg. No. 34704-50041-AA
Spreader/Sticker	Nu-Film-IR	Miller Chem. & Fert. Corp.	NA
Spreader/Sticker	Lastick	Setre (Helena)	NA
Spreader/Sticker	Insist 90	Wilbur-Ellis	NA
Spreader/Sticker	R-56	Wilbur-Ellis	CA Reg. No. 2935-50144
Silicone-based	SilEnergy	Brewer International	NA
Silicone-based	Silnet 200	Brewer International	NA
Silicone-based	Bind-It MAX	Estes Incorporated	NA
Silicone-based	Thoroughbred	Estes Incorporated	NA
Silicone-based	Aero Dyne-Amic	Helena	CA Reg. No. 5905-50080-AA
Silicone-based	Dyne-Amic	Helena	CA Reg. No. 5095-50071-AA
Silicone-based	Kinetic	Setre (Helena)	CA Reg. No. 5905-50087-AA
Silicone-based	Freeway	Loveland Products Inc.	CA Reg. No. 34704-50031 WA Reg. No. 34704-04005
Silicone-based	Phase	Loveland Products Inc.	CA Reg. No. 34704-50037-AA
Silicone-based	Phase II	Loveland Products Inc.	NA
Silicone-based	Silwet L-77	Loveland Products Inc.	CA Reg. No. 34704-50043

Type	Product Name	Company	EPA Registration Number
Silicone-based	Sun Spreader	Red River Specialties, Inc.	NA
Silicone-based	Sylgard 309	Wilbur-Ellis	CA Reg. No. 2935-50161
Silicone-based	Syl-Tac	Wilbur-Ellis	CA Reg. No. 2935-50167
Oil-based			
Crop Oil Concentrate	Brewer 83-17	Brewer International	NA
Crop Oil Concentrate	Majestic	Crown (Estes Incorporated)	NA
Crop Oil Concentrate	Agri-Dex	Helena	CA Reg. No. 5905-50094-AA
Crop Oil Concentrate	Crop Oil Concentrate	Helena	CA Reg. No. 5905-50085-AA
Crop Oil Concentrate	Crop Oil Concentrate	Loveland Products Inc.	
Crop Oil Concentrate	Herbimax	Loveland Products Inc.	CA Reg. No. 34704-50032-AA WA Reg. No. 34704-04006
Crop Oil Concentrate	Red River Forestry Oil	Red River Specialties, Inc.	NA
Crop Oil Concentrate	R.O.C. Rigo Oil Conc.	Wilbur-Ellis	NA
Crop Oil Concentrate	Mor-Act	Wilbur-Ellis	CA Reg. No. 2935-50098
Methylated Seed Oil	SunEnergy	Brewer International	NA
Methylated Seed Oil	Sun Wet	Brewer International	NA
Methylated Seed Oil	Methylated Spray Oil Conc.	Helena	NA
Methylated Seed Oil	MSO Concentrate	Loveland Products Inc.	CA Reg. No. 34704-50029-AA
Methylated Seed Oil	Red River Supreme	Red River Specialties, Inc.	NA
Methylated Seed Oil	Sunburn	Red River Specialties, Inc.	NA
Methylated Seed Oil	Sunset	Red River Specialties, Inc.	NA
Methylated Seed Oil	Hasten	Wilbur-Ellis	CA Reg. No. 2935-50160 WA Reg. No. 2935-02004
Methylated Seed Oil	Super Spread MSO	Wilbur-Ellis	NA
Methylated Seed Oil + Organosilicone	Inergy	Crown (Estes Incorporated)	NA
Vegetable Oil	Noble	Estes Incorporated	NA
Vegetable Oil	Amigo	Loveland Products Inc.	CA Reg. No. 34704-50028-AA WA Reg. No. 34704-04002
Vegetable Oil	Competitor	Wilbur-Ellis	CA Reg. No. 2935-50173 WA Reg. No. AW-2935-04001
Fertilizer-based			
Nitrogen-based	Quest	Setre (Helena)	CA Reg. No. 5905-50076-AA
Nitrogen-based	Dispatch	Loveland Products Inc.	NA
Nitrogen-based	Dispatch 111	Loveland Products Inc.	NA
Nitrogen-based	Dispatch 2N	Loveland Products Inc.	NA
Nitrogen-based	Dispatch AMS	Loveland Products Inc.	NA
Nitrogen-based	Flame	Loveland Products Inc.	NA
Nitrogen-based	Bronc	Wilbur-Ellis	NA
Nitrogen-based	Bronc Max	Wilbur-Ellis	NA
Nitrogen-based	Bronc Max EDT	Wilbur-Ellis	NA
Nitrogen-based	Bronc Plus Dry EDT	Wilbur-Ellis	WA Reg. No.2935-03002
Nitrogen-based	Bronc Total	Wilbur-Ellis	NA
Nitrogen-based	Cayuse Plus	Wilbur-Ellis	CA Reg. No. 2935-50171
Special Purpose or Utility			
Buffering Agent	Buffers P.S.	Helena	CA Reg. No. 5905-50062-ZA
Buffering Agent	Spray-Aide	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50006-AA
Buffering Agent	Oblique	Red River Specialties, Inc.	NA
Buffering Agent	Tri-Fol	Wilbur-Ellis	CA Reg. No. 2935-50152
Colorants	Hi-Light	Becker-Underwood	NA
Colorants	Hi-Light WSP	Becker-Underwood	NA
Colorants	Marker Dye	Loveland Products Inc.	NA
Colorants	BullsEye	Milliken Chemical	NA
Colorants	Signal	Precision	NA
Compatibility/ Suspension Agent	E Z MIX	Loveland Products Inc.	CA Reg. No. 36208-50006

Type	Product Name	Company	EPA Registration Number
Compatibility/ Suspension Agent	Support	Loveland Products Inc.	WA Reg. No. 34704-04011
Compatibility/ Suspension Agent	Blendex VHC	Setre (Helena)	NA
Deposition Aid	Cygnet Plus	Brewer International	CA Reg. No. 1051114-50001
Deposition Aid	Poly Control 2	Brewer International	NA
Deposition Aid	CWC Sharpshooter	CWC Chemical, Inc.	NA
Deposition Aid	ProMate Impel	Helena	NA
Deposition Aid	Pointblank	Helena	CA Reg. No. 52467-50008-AA-5905
Deposition Aid	Strike Zone DF	Helena	CA Reg. No. 5905-50084-AA
Deposition Aid	Compadre	Loveland Products Inc.	CA Reg. No. 34704-50050 WA Reg. No. 34704-06004
Deposition Aid	Intac Plus	Loveland Products Inc.	NA
Deposition Aid	Liberate	Loveland Products Inc.	CA Reg. No. 34704-50030-AA
Deposition Aid			WA Reg. No. 34704-04008
Deposition Aid	Reign	Loveland Products Inc.	CA Reg. No. 34704-50045 WA Reg. No. 34704-05010
Deposition Aid	Weather Gard	Loveland Products Inc.	CA Reg. No. 34704-50042-AA
Deposition Aid	Mist-Control	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50011-AA
Deposition Aid	Secure Ultra	Red River Specialties, Inc.	NA
Deposition Aid	Bivert	Wilbur-Ellis	CA Reg. No. 2935-50163
Deposition Aid	Coverage G-20	Wilbur-Ellis	NA
Deposition Aid	EDT Concentrate	Wilbur-Ellis	NA
Deposition Aid	Sta Put	Setre (Helena)	CA Reg. No. 5905-50068-AA
Defoaming Agent	Defoamer	Brewer International	NA
Defoaming Agent	Fighter-F 10	Loveland Products Inc.	NA
Defoaming Agent	Fighter-F Dry	Loveland Products Inc.	NA
Defoaming Agent	Foam Fighter	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50005-AA
Defoaming Agent	Foam Buster	Setre (Helena)	CA Reg. No. 5905-50072-AA
Defoaming Agent	Cornbelt Defoamer	Van Diest Supply Co	NA
Defoaming Agent	No Foam	Wilbur-Ellis	CA Reg. No. 2935-50136
Diluent/Deposition Agent	Improved JLB Oil Plus	Brewer International	NA
Diluent/Deposition Agent	JLB Oil Plus	Brewer International	NA
Diluent/Deposition Agent	Hy-Grade I	CWC Chemical, Inc	NA
Diluent/Deposition Agent	Hy-Grade EC	CWC Chemical, Inc	NA
Diluent/Deposition Agent	Red River Basal Oil	Red River Specialties, Inc.	NA
Foam Marker	Align	Helena	NA
Foam Marker	R-160	Wilbur-Ellis	NA
Invert Emulsion Agent	Redi-vert II	Wilbur-Ellis	CA Reg. No. 2935-50168
Tank Cleaner	Wipe Out	Helena	NA
Tank Cleaner	All Clear	Loveland Products Inc.	NA
Tank Cleaner	Tank and Equipment Cleaner	Loveland Products Inc.	NA
Tank Cleaner	Kutter	Wilbur-Ellis	NA
Tank Cleaner	Neutral-Clean	Wilbur-Ellis	NA
Tank Cleaner	Cornbelt Tank-Aid	Van Diest Supply Co.	NA
Water Conditioning	Rush	Crown (Estes Incorporated)	NA
Water Conditioning	Blendmaster	Loveland Products Inc.	NA
Water Conditioning	Choice	Loveland Products Inc.	CA Reg. No. 34704-50027-AA WA Reg. No. 34704-04004
Water Conditioning	Choice Xtra	Loveland Products Inc.	NA
Water Conditioning	Choice Weather Master	Loveland Products Inc.	CA Reg. No. 34704-50038-AA
Water Conditioning	Cut-Rate	Wilbur-Ellis	NA

APPENDIX C
Standard Operating Procedures, Best Management Practices, Design Features, Mitigation Measures, and Monitoring

SOPs and Special Design Features

Standard Operating Procedures (SOPs) are the management controls and performance standards intended to protect and enhance natural resources that could be affected by vegetation treatments, including the use of herbicides. The BLM will follow SOPs to ensure that risks to human health and the environment from herbicide treatment actions and other vegetation treatments are kept to a minimum. Herbicide treatment SOPs are described in Table 2-8, pages 2-30 to 2-35 and Appendix B of the ROD to the PEIS (BLM 2007a). Noxious weed control standards and project criteria from the Biological Assessment for the Bureau of Land Management Salmon and Challis Field Offices' 2002 Noxious Weed Control Program for Snake River Sockeye Salmon, Snake River Spring/Summer Chinook Salmon, Steelhead Trout, and Bull Trout have been incorporated.

The decision to use the new herbicides approved in the 2007 PEIS is supported by herbicide treatment SOPs and mitigation measures to ensure that the natural and human environment are protected during implementation of herbicide treatments. Herbicide treatments would follow BLM procedures outlined in BLM Handbook H-9011-1 (Chemical Pest Control), and manuals 1112 (Safety), 9011 (Chemical Pest Control), and 9015 (Integrated Weed Management), and all applicable standards in previous NEPA analyses, and would meet or exceed states' label standards (BLM 2007a). The BLM would comply with changes in label directions and with all state registration requirements. The active ingredients and formulations approved for use would only be applied for uses, and at application rates, specified on the label directions.

Herbicide application schedules would be designed to minimize potential impacts to non-target plants and animals, while remaining consistent with the objective of the vegetation treatment program. The application rates depend upon the target species, the presence and condition of non-target vegetation, soil type, depth to the water table, presence of other water sources, and the label requirements. The application method chosen depends upon the treatment objective (removal or reduction); accessibility, topography, and size of the treatment area; characteristics of the target species and the desired vegetation; location of sensitive areas and potential environmental impacts in the immediate vicinity; anticipated costs; equipment limitations; and meteorological and vegetative conditions of the treatment area at the time of treatment.

Where applicable, special design features and best management practices would be incorporated for the prevention and treatment of noxious weeds when authorizing new permitted/ authorized activities. These practices or combinations of practices are considered to be the most effective means of preventing or reducing the amount of disturbance or impact to a resource. A list of the practices that would be implemented as part of the action alternatives to reduce the potential for impacts to resources is presented below.

Standard Operating Procedures for Herbicide Use

Aerial application of herbicide is not authorized under the No Aerial Herbicide Application Alternative and therefore the design features listed for aerial application of herbicide treatment would not apply to that alternative.

- Review, understand, and conform to the "Environmental Hazards" section on the herbicide label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or to the environment.
- Avoid accidental direct spray and spill conditions to reduce the largest potential impacts.
- Use the typical application rate, rather than the maximum application rate, to reduce potential risk to most species for most herbicides.
- Minimize application areas where possible.
- Include pre-treatment surveys for sensitive habitat and species listed under the ESA within or adjacent to proposed treatment areas.
- Notify adjacent landowner(s) prior to treatment.
- Clean equipment, vehicles, and clothing of personnel to remove weed seeds/materials.
- Emphasize the use of native or sterile species for revegetation and restoration projects.
- Use weed-free feed for horses and pack animals involved in weed control efforts and weed-free straw and mulch for stabilization and rehabilitation activities.
- Only those herbicides officially approved for use on BLM-administered lands in Idaho (2007 PEIS for Vegetation Treatment on BLM Lands) and labeled for application on rangelands would be utilized. The herbicides approved for use on BLM-administered lands in Idaho are listed in Appendix B. Weed species listed in Appendix D would be targeted for control and/or eradication.
- All approved herbicides would be handled and applied in strict accordance with all label restrictions and precautions, as well as applicable BLM Policy. In instances where herbicide labels, federal, or state stipulations overlap, the more restrictive criteria would be adhered to. Selection of an herbicide for site-specific weed control would depend on its effectiveness on a particular weed species, success in previous similar applications, habitat types, soil types, and nearness of water and private property.
- Application of any herbicide to treat weeds would be performed by or directly supervised by a state or federal licensed applicator. These applicators are responsible for complying with all applicable Federal, State, and county laws, codes, and regulations connected with the use of weed control herbicides. This includes BLM, County, or State personnel or their contractors.
- All applicators would comply with safety requirements, including personal protective equipment, spray equipment, herbicide labels and rates, and environmental concerns. All contractors and county agreement applicators are responsible for the cleanup of hazardous materials released on public lands, if they are at fault. All weed control efforts done by BLM personnel or their authorized agents would be done in accordance with the applicable Safety Plan and the Storage, Transportation and Spill Contingency Plans. Emergency response kits and trained personnel would be available and on-site whenever herbicides are transported or stored.

- Only the quantity of herbicides needed for each day's operation would be transported from storage/mixing areas to application sites.
- No spraying of any herbicide would occur when wind velocity exceeds 10 mph, as per State of Idaho Department of Agriculture standards, or as indicated in the Special Design Features listed below. No aerial application of herbicides would be applied when wind velocities exceed 5 mph.
- All aerial herbicide applications would be conducted in a manner that avoids application overlap and drift.
- Aerial herbicide application would be used to control or eradicate large infestation of weeds or in areas that have steep slopes, rock soils, and are difficult to access.
- Dyes may be used to obtain uniform coverage. This would help prevent under or over treatment/application and help with detection of drift. It would also reduce the risk of treating non-target species.
- Herbicide applications would be implemented in a manner to avoid off site movement of herbicides either through the air, through soil, or along the soil surface. Project site terrain, soil type, and vegetation would be taken into consideration when selecting herbicide type, application method, and application timing.
- Areas that pose exposure risk would be posted to warn the public of herbicide use and hazards.
- Ground-based herbicide application would include broadcast "block" spraying or spot spraying with backpack pumps, spraying from a pumper unit on the back of a pickup truck or an OHV, or pack animals to transport and apply herbicides in more rugged terrain. Ground based application would occur in smaller, fragmented patches of weeds where herbicide treatment is the most effective means of controlling or eradicating weeds.
- A combination of herbicides may be used when it is determined that this is the most effective way to control multiple weed species, or when mixing of herbicides are more effective on weed species. All herbicide combinations would conform to label guidelines for mixing.

Standard Operating Procedures for Using Biological Agents

The use of biological control agents would be conducted in accordance with BLM procedures outlined in The Use of Biological Control Agents of Pests on Public Lands (BLM 1990). Only those biological agents that have been tested and approved by APHIS would be released on public lands.

When considering the use of grazing animals as an effective biological control measure, several factors will be taken into consideration including:

- Target weed species present.
- Size of the infestation of target weed species.
- Other plant species present.
- Stage of growth of both target and other plant species present.
- Palatability of all plant species present.
- Selectivity of all plant species present by the grazing animals species that is being considered for use as a biological control agent.
- The availability of that grazing animal within the treatment site area.

- Type of management program that is logical and realistic for the specific treatment site.
- Grazing animal’s potential to spread seed.
- Proximity to bighorn sheep populations if using domestic sheep/goats.

Design Features to Protect Cultural Resources

- The CFO or SFO Archaeologist or his/her qualified representative would assess and record cultural sites to determine appropriate protective measures prior to weed treatment measures that would affect historic properties.
- A Class III Cultural Resources inventory would be conducted prior to any weed treatment activities that could potentially affect cultural resources. If historic properties are discovered they would be avoided as stipulated by the CFO or SFO Archaeologist.
- If weed treatment measures cannot avoid historic properties, the CFO or SFO Archaeologist would develop and complete appropriate mitigation measures prior to planned surface disturbing activities. These plans would be developed and executed in cooperation with SHPO and appropriate Native American groups and interested individuals.
- The following provisions would be included in weed treatment actions that affect cultural resources: “Pursuant to 43 CFR 10.4(b), the Project Supervisor must notify the BLM Field Manager, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony on federal land. Pursuant to 43, CFR 10.4(c), the Project Supervisor must immediately stop any ongoing activities connected with the discovery, and make a reasonable effort to protect the discovered human remains, or objects.”

Design Features for Protecting Riparian Areas, Including occupied T& E Fish Habitat

Treatment activities including spraying, manual, mechanical or biological treatments may occur within designated Riparian Habitat Conservation Areas as defined by INFISH/PACFISH.

- Disking, plowing, or blading would not occur within appropriate buffer zones surrounding riparian areas as decided by an ID Team. Distances identified for PACFISH/INFISH will be followed when determining buffer zone width.
- Soils that are fully saturated would not be disturbed or only minimally disturbed.
- In locations adjacent to streams where sediment has been identified, through the Total Maximum Daily Load (TMDL) process, as an instream pollutant, an ID Team would determine whether additional best management practices for erosion control would be required.
- Utilization limits on non-target vegetation and monitoring protocols would be developed for biological treatments utilizing domestic grazing animals in riparian areas.

Riparian Weed Treatment Buffers

Buffer	Max. Wind Speed	Application Method	Herbicides Authorized
<20 Ft. from live water	5 mph	Backpack sprayer Hand pump sprayer Wicking, wiping, dipping painting, injecting	2,4-D Amine Glyphosate(aquatic formulation only) Triclopyr **No surfactants will be used** **Dye is required**
20-50 Ft. from live water	10 mph	Ground based spot spraying (ATV, backpack, hand sprayer)	2,4-D Amine Glyphosate Clopyralid Imazapyr Triclopyr **No surfactants will be used** **Dye is required**
>50 Ft. from live water	10 mph	Ground based spot spraying (ATV, backpack, hand sprayer)	All BLM approved herbicides and adjuvants
>50 Ft. from live water	5 mph	Ground based broadcast boom spraying (ATV, truck)	All BLM approved herbicides and adjuvants
>100 Ft. from live water	10 mph	Ground based broadcast boom spraying (ATV, truck)	All BLM approved herbicides and adjuvants

- No herbicide mixing would be authorized within 50 feet of any live waters. Mixing and loading operations must take place in an area where an accidental spill would not contaminate a stream or body of water before it could be contained.
- No spraying of picloram would be authorized within 50 feet of any live waters or shallow water tables.
- No surfactant use would be authorized within 50 feet of live water.
- Dye would be used in all riparian spray treatments.

Design Features to Protect Sensitive Plants

- Surveys for sensitive plants would be conducted prior to herbicide broadcast and ground disturbing mechanical treatments to determine the presence or absence of sensitive plants.
- Herbicide broadcast and ground disturbing mechanical activities treatments would not be allowed in sensitive plant habitat.
- Selective treatment methods and appropriate mitigation measures would be made and supervised by qualified field office personnel prior to manual, herbicide, and/or biological agent treatments in sensitive plant habitat.
- Individual sensitive plant needs would be addressed by incorporating protective and/or beneficially designed features into treatment actions in or near (within 0.5 miles) sensitive plant habitat.
- Individual sensitive plant needs would be considered when selecting herbicides and application methods.
- Applicators would be trained in sensitive plant identification.

In addition, the following management efforts would be employed as necessary to protect rare plants and to help prevent harm to insects in the vicinity:

- Designate buffer zones around rare plants.
- Manage herbicide drift especially to nearby blooming plants.
- Use typical rather than maximum rates of herbicides in areas with rare plants.
- Choose herbicide formulations (i.e., do not use granular treatments) that are not easily carried by social insects to hives, hills, nests and other "homes" in areas with rare plants.
- Choose herbicides that degrade quickly in the environment when herbicides must be used in rare plant habitat.

Design Features to Protect Special Status Wildlife Species

- Aerial application of herbicides within 0.5 mile of an active bald eagle nest during nesting season (February 1 through August 15) would be avoided.
- Herbicide application restrictions associated with aquatic habitats, riparian areas, and wetlands are listed in the table under Design Features for Protecting Riparian Areas. Herbicide use within 0.5 mile of occupied special status species habitat would be limited to ground based spot treatment of weed populations and implemented in accordance to the herbicide use restrictions, also listed in the table of Design Features for Protecting Riparian Areas.

Mitigation Measures

In addition to using SOPs, the BLM would implement additional measures to mitigate potential adverse environmental effects as a result of vegetation treatment activities as appropriate based on site-specific assessments. Together these SOPs and mitigation measures ensure that all practicable means to avoid or minimize environmental harm have been adopted by the BLM. Mitigations for the various resources that all BLM District and Field Offices must adhere to are listed in Table 2-9, page 2-41, and Appendix C of the PEIS (BLM 2007).

These mitigation measures apply to plants, animals, and other resources at the programmatic level. Interactive risk assessment spreadsheets and other information contained in ecological risk assessments prepared in support of the PEIS may also be used by the CFO and SFO to develop more site-specific mitigation and management plans based on local site-specific conditions (e.g., soil type, rainfall, vegetation type, herbicide treatment method, and herbicide application rate). Timing restrictions or similar practices may also be used by the BLM to reduce the level of risk to an acceptable level. To prevent the spread of noxious weeds and invasive plants, the BLM would also follow prevention measures to minimize the amount of existing non-target vegetation that is disturbed during project planning. Preventions measures are found in Table 2-7, on page 2-24 of the 2007 PEIS.

Monitoring

Monitoring programs are necessary to evaluate management activities, control noxious weeds, and demonstrate BLM compliance with applicable laws, regulations, and policies. Monitoring and research are essential to provide information necessary for long-term planning and decision-making. For example, monitoring and research help determine if: 1) BLM is achieving the management objectives established in land use and activity plans, 2) certain projects or management actions are having the desired effect, and 3) species-specific control methods are effective. Monitoring and research also allows BLM to base its noxious weed management program on sound ecological knowledge of noxious weeds and their relationships to management actions (BLM 1996).

APPENDIX D
Species Specific Treatment Options Under the Proposed Action Alternative

Russian knapweed (*Acroptilon repens*) is native to Eurasia and was introduced into North America in the late 1800s. It is a deep-rooted long-lived perennial that can form dense colonies in riparian areas, cultivated fields, orchards, pastures, and roadsides. Russian knapweed is an aggressive weed that reproduces from seed and adventitious buds on a creeping root system (Fletcher and Renney 1963, Moore and Frankton 1974). Some stands have been in existence for 75 years. Russian knapweed is toxic to horses and causes chewing disease (UI 2007).

Manual and mechanical treatments are normally not effective at controlling Russian knapweed. Newly established, small, and large infestations would be controlled exclusively with herbicide application. Selective herbicide application would be used to eradicate newly established infestations. Selective and broadcast application of herbicide would be used on small and large infestations. The newly approved combination of diflufenzopyr and dicamba would be available in addition to clopyralid, 2,4-D, glyphosate, picloram, triclopyr, and other approved herbicides and mixtures found to be effective at controlling Russian knapweed. Applications would optimally be made at the pre-bud or bud stage. Currently, there are no approved biological agents available to control Russian knapweed.

Hoary alyssum (*Berteroa incana*) is native to Eurasia introduced to the United States as a contaminant to ship's ballast in the late 1800s. It may grow as an annual, winter annual, biennial, or a short-lived perennial and is most abundant in disturbed sites such as roadsides. Hoary alyssum is a prolific seed producer that thrives on dry sandy or gravelly soils (USFS 2007a).

Hand-pulling or digging can be very effective for small infestations but should be done before flowering. Prescribed burning can also be used for control of this species. There are several effective herbicides, but they may require more than one application and should be applied prior to flowering. Hoary alyssum is susceptible to many herbicides such as 2,4-D, dicamba, metsulfuron, and glyphosate. In general, effective chemical control requires multiple applications and timing and application rate are crucial for successful control. Herbicide treatments should be performed in the spring, before the plant begins to bolt up and flower. A summer or fall herbicide treatment may also be applied to stop seed production. There are no biological agents currently available for this species.

Cheatgrass (*Bromus tectorum*)
Cheatgrass is native to Eurasia and was introduced to the United States as a seed impurity in the late 1800s. It is an annual that is highly competitive in dry rangelands. Cheatgrass is a self-perpetuating winter annual that spreads easily across upland landscapes altered by fire, through a prolific seed source. This grass is capable of altering entire ecosystems by increasing the fire frequency and forming monocultures. It is tolerant of grazing and is both adapted to and promotes frequent fire cycles, potentially leading to a transition from native perennial communities to pure stands of annual grasslands (USFS 2007).

As determined by an ID Team, monocultures of cheatgrass and other exotic annual grasses (e.g., *Bromus japonicus*, and *Taeniatherum caput-medusae*) would likely be treated with herbicides as opportunities and funding exist to improve habitat, forage productivity, and soil stability. Timing of herbicide application would be determined by the ID Team and may be repeated from 2-5 years. The newly approved active ingredient imazapic would be available in addition to glyphosate and other approved herbicides found to be effective at controlling exotic annual grasses. Currently there are no approved biological control agents available to control exotic annual grasses.

Whitetop or Hoary cress (*Cardaria draba*) is native to Eurasia and was introduced to the United States as a seed contaminant. It is an herbaceous, relatively long-lived, deep-rooted perennial with numerous stems, and spreads by seed and rhizome. It generally can be found in disturbed open, unshaded areas and grows on a variety of soils and range types and is commonly found on relatively moist alkaline and disturbed soils where it is highly competitive and forms dense monotypic stands (USFS 2007). The deep root system and ability to reproduce vegetatively and by seed make this weed very difficult to control.

Small and large infestations may be treated with broadcast applications of herbicide. Metsulfuron, 2,4-D, and other approved herbicides and mixtures found to be effective at controlling whitetop would be available. Herbicide applications on small and large infestations would normally require an aggressive reapplication program to eliminate developing seedlings from area seed bank and root regeneration. Currently there are no approved biological agents available to control whitetop.

Musk thistle (*Carduus nutans*) is a biennial thistle capable of forming dense stands that are practically impenetrable because of the spiny herbage and large stature. This thistle is a problem because it diminishes wildlife and livestock forage through competition and reduces recreational opportunities by acting as an “armed fence” preventing access to areas it borders. Musk thistle can grow under a wide range of conditions and moves into disturbed sunny areas and establishes well on bare soil. It invades rangelands, forestlands, and stream banks and has the potential to form dense stands, displacing native vegetation (USFS 2007).

The BLM would continue to release all species of obtainable insects to control musk thistle in order to more quickly increase the insects’ population growth and dispersal over the landscape. The biological agents *Trichosirocalus horridus* and *Cheilosa corydon* would be available for control of large musk thistle infestations. Different insects would be used as they became available. Small infestations would be controlled with selective application of herbicide. Large infestations would be controlled with selective and broadcast herbicide application. The newly approved combination of diflufenzopyr and dicamba would be available in addition to chlorsulfuron, clopyralid, dicamba, 2,4-D, glyphosate, metsulfuron, triclopyr, picloram and other approved herbicides and mixtures found to be effective at controlling biennial thistles.

Spotted knapweed (*Centaurea maculosa*) is native to Eastern Europe and may have been introduced to North America as a seed impurity in alfalfa in the late 1800s. Spotted knapweed is a nonnative, deeply taprooted perennial forb that is a prolific seed producer. This perennial species can live up to 9 years and is capable of producing seeds each year (Boggs and Story 1987). Seeds are viable for a minimum of 7 years. Once established spotted knapweed can form monotypic stands and this species now dominates millions of acres of western rangelands. Spotted knapweed prefers rangelands, dry meadows, pastures, upland rocky areas, roadsides, and the sandy or gravelly floodplains of streams and rivers (Prather et al. 2002). Spotted knapweed establishes and dominates on dry, disturbed sites, especially along roads but is also found in riparian meadows. It also invades relatively undisturbed perennial native plant communities and is capable of establishing locally at elevations of more than 8,000 feet (USFS 2007). Several biological control agents (*Urophora affinis, Urophora quadrifasciata, Metzneria paucipunctella, Agapeta zoegana, Cyphocleonus achates, Pelochrista medullana, Larinus minutus,* and *Pterolonche inspersa*) would be available to control spotted knapweed. Some of these control agents have already been utilized because of the widespread presence of spotted knapweed. Under this alternative, the field offices would continue to establish as many kinds of insects or pathogens as are available or become available to control knapweed, both widely over the landscape and intensively in some areas to create "insectaries" where populations can be harvested to spread to other areas. Herbicides would be used to control knapweed along routes of spread such as roads and campgrounds, and in areas of new invasion where knapweed is still isolated and in small patches.

Within the CFO the upper Pahsimeroi and East Fork of the Salmon are relatively weed-free areas and therefore high priority treatment areas in order to maintain their weed-free status. The SFO will continue to focus knapweed treatments in the area between its northern border with the SCNF south to Agency and Hayden Creeks. Small infestations would be controlled with selective application of herbicide. Large infestations would be controlled with selective and broadcast application of herbicide. The newly approved combination of diflufenzopyr with dicamba, along with clopyralid, dicamba, picloram, 2,4-D, and other approved herbicides and mixtures found to be effective at controlling spotted knapweed would be available. Reapplication of herbicide may be necessary to control spotted knapweed until the seed bank is eliminated through attrition.

<u>Rush skeletonweed (*Chondrilla juncea*)</u> is a relatively new invader and serious threat to public lands in Custer and Lemhi Counties. It dominates millions of acres of western rangelands and under favorable conditions may develop extremely high densities. Rush skeletonweed is native to Eurasia and thrives in well-drained, sandy textured or rocky soils, along roadsides, in rangelands, pastures, and grain fields. There are three widespread forms of rush skeletonweed in the United States. These forms, designated A, B, and C, have narrow, intermediate, and broad rosette leaves respectively (Sheley and Petroff 1999). This long-lived perennial plant of the sunflower family has the capacity to invade relatively undisturbed perennial plant communities and has a "dandelion-like" seed that spreads on the wind, resulting in wide-spread infestations that may be hard to detect (USFS 2007). Soil disturbance aids establishment and the extensive and deep root system makes rush skeletonweed difficult to control.

There has been a significant increase in new rush skeletonweed sites discovered by the CFO and SFO recently. Accordingly they are high treatment priorities for both field offices. Small and large infestations would be treated with broadcast application of herbicide. Herbicide applications on small and large infestations would normally require an aggressive reapplication program to eliminate developing seedlings from area seed bank and root regeneration. Picloram, 2, 4-D and other approved herbicides and mixtures found to be effective at controlling rush skeletonweed would be available. Biological control agents would also be available to provide some suppression. The rust, *Puccinia chondrillia* and the gall mite, *Aceria chondrillae* could be used to control Form A of rush skeletonweed. A gall midge, *Chystiphora schmidti*, could be used to control all forms of rush skeletonweed.

<u>Canada thistle (*Cirsium arvense*)</u> is native to southeastern Europe and the eastern Mediterranean area, and was probably introduced to North America in the 1600s as a contaminant of crop seed

and/or ship's ballast. It is a creeping perennial that adapts to a wide range of habitats, including riparian areas. This species reproduces from vegetative buds in its root system and from seed. Canada thistle has the potential to rapidly form dense infestations through vegetative reproduction (USFS 2007). Canada thistle is also difficult to control because its extensive root system allows it to recover from control attempts. Seed can remain viable in soil up to 20 years, and deep burial promotes survival longevity.

Newly established, small, and large infestations would be controlled with herbicide application. Selective chemical application would be used to eradicate newly established infestations. Selective and broadcast herbicide application would be used on small and large infestations. The newly approved combination of diflufenzopyr and dicamba would be available in addition to clopyralid, chlorsulfuron, glyphosate, and dicamba and other approved herbicides and mixtures found to be effective at controlling Canada thistle. Where other methods are not feasible, approved herbicides (aquatic formula if necessary) may be used adjacent to wetlands. The biological agents *Ceutorhyncus litura* and *Urophora carduii* would also be available for control of this species and could be used to protect wetland habitat in areas where herbicides are not appropriate. Manual and mechanical treatments are normally not effective at controlling Canada thistle but may potentially be employed adjacent to wetlands where other methods are not feasible.

Bull thistle (*Cirsium vulgare*) is a biennial thistle that is capable of forming dense stands that are practically impenetrable because of the spiny herbage and large stature. This thistle is a problem because it diminishes wildlife and livestock forage through competition and reduces recreational opportunities by acting as an “armed fence” preventing access to areas it borders. Bull thistle is a native of Eurasia and widely established in North America through seed contamination. It reproduces from seed, of which it is capable of producing thousands , and occurs primarily in disturbed habitats such as degraded pastures and rangelands, along trails and roadsides, and in seepage areas or along streambanks (USFS 2007).

Small infestations would be controlled with selective application of herbicide. Large infestations would be controlled with selective and broadcast herbicide application. The newly approved combination of diflufenzopyr and dicamba would be available in addition to chlorsulfuron, clopyralid, dicamba, 2,4-D, glyphosate, metsulfuron, triclopyr, picloram and other approved herbicides and mixtures found to be effective at controlling biennial thistles. The biological agent *Trichosirocalus horridus* could be used to control large bull thistle infestations.

Hound’s tongue (*Cynoglossum officinale*) was introduced to North America as a crop seed contaminant from Europe. It is a highly invasive biennial or short-lived perennial forb with a thick woody taproot that often occurs in dense stands. It is adapted to a wide range of conditions, is shade tolerant, and thrives on wetter soils. Hound’s tongue contains poisonous alkaloids that are toxic to horses and cattle. Hound’s tongue can be found on disturbed pastures, roadsides, forest edges, and meadows. It spreads by barbed seeds, which readily attach to wool and fur (USFS 2007).

Hound’s tongue has become an increased treatment priority for the SFO due to a recent expansion in infestations in the northern part of the SFO area. Locations include 4th of July, Little 4th of July, Tower and Agency Creeks. Small infestations of hound’s tongue would be controlled throughout the CFO and SFO with selective application of herbicide. Large infestations would be controlled with selective and broadcast application of herbicide. Picloram, dicamba, 2,4-D and other approved herbicides and mixtures found to be effective at controlling this species would be available. Currently there are no approved biological control agents available to control hound's tongue.

Leafy spurge (*Euphorbia esula*) is native to Eurasia and was imported to the United States as a seed impurity around 1827. It is an aggressively spreading long-lived, deep-rooted perennial forb that forms dense clumps that sprout from its deep and extensive root and rhizome system. Leafy spurge will thrive in many soil types, especially after soil disturbance and prefers disturbed soils and commonly occupies fields, roadsides, stream valleys, open woodlands, and waste places. Leafy spurge can rapidly invade disturbed sites by establishing from seed and by sprouting from existing roots and root crowns. Once established, leafy spurge tends to expand and persist and is capable of displacing native vegetation and forming monocultures. Leafy spurge seeds float on water, often resulting in new infestations along rivers and in areas that are periodically flooded. Due to its extensive root system repeated applications of herbicide over several years are usually necessary to achieve control (USFS 2007). A successful management approach may involve a combination of herbicide, biocontrol, and targeted intensive grazing with domestic sheep or goats (NDSU 1995).

Thirteen biological agents (*Aphthona abdominalis, A. cyparissiae, A. czwalinae, A. flava, A. lacertosa, A. nigriscutis, Chamaesphecia empiformis, C. hungarica, C. tenthrediniformis, Dasineura capsulae, Hyles euphorbiae, Oberea erythrocephala,* and *Spurgia esulae*) would be available to control large infestations of leafy spurge. The SFO will continue to use an integrated approach (including targeted grazing by domestic goats) on leafy spurge sites in the Carmen Creek/Badger Springs area. Newly established, small, and large infestations would be controlled exclusively with herbicide application. Selective application of herbicide would be used to eradicate newly established infestations. Selective and broadcast application of herbicide would be used on small and large infestations. The newly approved active ingredient imazapic would be available along with 2,4-D, dicamba, glyphosate, picloram and other approved herbicides and mixtures found to be effective at controlling leafy spurge. Herbicide applications on small and large infestations would normally require an aggressive reapplication program to eliminate developing seedlings from area seed bank and root regeneration. Manual and mechanical treatments are normally not effective at controlling leafy spurge.

Halogeton (*Halogeton glomeratus*) is an exotic succulent winter to summer annual forb native to Eurasia. It typically invades disturbed arid and semi-arid sites with alkaline to saline soils. Plant tissues accumulate salts from lower soil horizons and the salts leach from dead plant material, increasing topsoil salinity and favoring halogeton seed germination and establishment. Halogeton competes poorly with established perennial vegetation. Halogeton is high in oxalates and is a serious health threat to grazing animals, especially sheep (CDFA 2007).

Small infestations of halogeton may be controlled with selective application of herbicide as opportunities and funding exist. Large infestations would be controlled with selective and broadcast application of herbicide. Tetbuthiuron, 2,4,-D, metsulfuron and other approved herbicides and mixtures found to be effective at controlling halogeton would be available. Currently there are no approved biological control agents available to control halogeton.

Black henbane (*Hyoscyamus niger*) is native to the Mediterranean and was introduced to the United States as an ornamental and medicinal plant in the 17th century. It is an annual or biennial that spreads via prolific seed production and contains poisonous alkaloids. Black henbane prefers well-drained soils (sandy to silt loam) that have been disturbed but is adaptable to a wide range of environmental conditions and is commonly found in pastures, fencerows, and along roadsides and other disturbed areas (UI 2007; Prather et al. 2002).

Small infestations would be controlled with selective application of herbicide. Large infestations would be controlled with selective and broadcast application of herbicide. Dicamba, metsulfuron, picloram, and other approved herbicides and mixtures found to be effective at controlling black henbane would be available. Currently there are no approved biological agents available to control black henbane.

Dalmatian toadflax (*Linaria dalmatica*) is native to the Mediterranean and Eurasia and was introduced to the United States as an ornamental. It is a deep-rooted, short-lived perennial with multiple stems that reproduces by seed and by vegetative buds on the roots (Sheley and Petroff 1999). This species can occupy a wide variety of conditions, but is often found along roadsides, trails, and other disturbed areas. Dalmatian toadflax invades disturbed open sites with well-drained coarse-textured soils, and is highly competitive in dry areas. Once established it has the capacity to expand into relatively intact native rangelands (USFS 2007).

Dalmatian toadflax infestations occur mainly in the CFO, in the Patterson Creek area of the Pahsimeroi, and also in Thompson Creek. There are eight biological control agents (*Brachypterolus pulicarius, Calophasia lunula, Eteobalea intermediella, Gymnaetron netum, and Mecinus janthinus*) available to control toadflax. Under this alternative, the field offices would continue to release all species of obtainable insects to control Dalmatian toadflax in order to more quickly increase the insects' population growth and dispersal over the landscape. Where these agents are used as part of the integrated weed management program, they would be placed on carefully selected sites in which the insects are adapted and protected from herbicide applications, disturbance by livestock, and other disruptions. Small infestations of Dalmatian toadflax would be controlled with selective spot treatment with herbicide. Large infestations may be treated with selective and broadcast application of herbicide. Herbicide applications on small and large infestations would normally require an aggressive reapplication program to eliminate developing seedlings from area seed bank and root regeneration. Chlorsulfuron, 2,4-D, dicamba, picloram and other approved herbicides and mixtures found to be effective at controlling Dalmatian toadflax would be available..

Yellow toadflax (*Linaria vulgaris*) is native to the Mediterranean and Eurasia and was introduced to the United States as an ornamental. They are deep-rooted, short-lived perennials with multiple stems that reproduce by seed and by vegetative buds on the roots (Sheley and Petroff 1999). Yellow toadflax is adapted to a wide range of conditions and establishes along streambanks as well as dry rangeland (USFS 2007).

Yellow toadflax is principally found in the CFO along the Salmon River between the Yankee Fork and Challis, and also in Thompson Creek. All toadflax species are very difficult to control and management plans should integrate as many strategies as possible to increase potential for success. Biological control agents are available that provide from fair to good control of yellow toadflax and herbicides are also available (e.g., picloram, 2,4-D, metsulfuron methyl) that can be effective with repeated applications.

Sulfur cinquefoil (*Potentilla recta*) is native to the Mediterranean and adapted to a wide range of environmental conditions. It is a long-lived multi-stemmed perennial that spreads by seed and via new shoots from the woody root crown. Disturbed sites are particularly susceptible to early colonization and rapid dominance by sulfur cinquefoil but it also appears to be capable of invading relatively intact native plant communities (USFS 2007).

Selective herbicides are currently the most effective means of control of sulfur cinquefoil. For several years following treatment, areas would need to be monitored for new plants germinating from the seed bank. Dicamba, 2,4-D, metsulfuron, and picloram can all provide effective control of cinquefoil (Rice 1999). Sulfur cinquefoil will re-establish within three to four years of herbicide treatment, so repeated applications are needed for long-term herbicide control (Rice et al. 1991). There are no biological control agents currently available for sulfur cinquefoil (WSNWCB 2007).

Puncturevine or goathead (*Tribulus terrestris*) is a mat forming annual native to the Mediterranean. It spreads by seed and is most often found on sandy, dry, or gravelly sites. This weed typically can be found on sandy soils disturbed by roadsides, trails, and waste areas where it easily spread by animals, bicycles, people, and vehicles. Puncturevine produces sharply pointed burs that puncture tires and injure feet, reducing the recreational potential of many areas (UI 2007). Seeds can stay dormant in the soil for 4 to 5 years, which makes eradication difficult (Whitson et al. 1996).

Tillage following germination and emergence is effective at control of puncturevine; however, tillage may bury seed that remains viable in the soil for several years. Two species of weevils are available for control of puncturevine: the stem boring weevil, *Microlarinus lareynii* and the fruit boring weevil *Microlarinus lypriformis*. Certain herbicides have also proven to be effective at controlling puncture vine including chlorosulfuron, 2,4-D, imazapyr, glyphosate, and dicamba (CDFA 2007).

APPENDIX E
Special Status Species

Listed below are descriptions of the BLM Special Status Species Designations along with the Special Status Animal and Plant Species that occur within the CFO and SFO and the types of habitat they are generally associated with.

BLM Category / Plants	BLM Category / Wildlife	Description of Characteristics
Type 1. Threatened, Endangered, Proposed, and Candidate Species	Type 1. ESA listed, Proposed, & Candidate Species	Species are listed by the USFWS or NOAA Fisheries as threatened or endangered, or they are proposed or candidates for listing under the ESA.
Type 2. Rangewide / Globally Imperiled Species – High Endangerment	Type 2. Rangewide / Globally Imperiled Species	These are species that are experiencing significant declines throughout their range with a high likelihood of being listed in the foreseeable future due to their rarity and/or significant endangerment factors.
Type 3. Rangewide / Globally Imperiled Species – Moderate Endangerment	Type 3. Regional/ State Imperiled Species	These are species that are experiencing significant declines in population or habitat and are in danger of regional or local extinctions in Idaho in the foreseeable future if factors contributing to their decline continue.
Type 4. Species of Concern	Type 4. Peripheral Species	These are species that are generally rare in Idaho with the majority of the breeding range largely outside the state.
Type 5. Watch List	Type 5. Watch List	Watch list species are not considered BLM sensitive species and associated sensitive species policy guidance does not apply. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats, species biology or statewide trends. This category includes species with insufficient data on population or habitat trends or the threats are poorly understood. However, there are indications that these species may warrant special status species designation and appropriate inventory or research efforts should be a management priority.

Animal Species	Field Office		Associated Habitat
	Challis	Salmon	
BLM Type 1 - ESA Listed, Proposed & Candidate Species			
Gray Wolf (*Canis lupus*) **EXP**	X	X	All
Grizzly Bear (*Ursus arctos*) **T**		X	All
Canada Lynx (*Lynx canadensis*) **T**	X	X	Coniferous forest, Riparian
Bald Eagle (*Haliaeetus leucocephalus*) **T**	X	X	Riparian/Open water
Yellow-billed Cuckoo (*Coccyzus americanus*) **C**	X	X	Riparian
Bull Trout (*Salvelinus confluentrus*) **T**	X	X	Aquatic
Sockeye Salmon (*Oncorhynchus nerka*) **E**	X	X	Aquatic
Chinook Salmon (*Oncorhynchus tschawytscha*) **T**	X	X	Aquatic
Steelhead (*Oncorhynchus mykiss*) **T**	X	X	Aquatic

Animal Species	Field Office		Associated Habitat
	Challis	Salmon	
BLM Type 2 - Rangewide/Globally Imperiled Species			
Pygmy Rabbit (*Brachylagus idahoensis*)	X	X	Sagebrush steppe
Greater Sage-grouse (*Centrocercus urophasianus*)	X	X	Sagebrush steppe, Riparian
Westslope Cutthroat (*Oncorhynchus clarki lewisi*)	X	X	Aquatic
Idaho Point-headed Grasshopper (*Acrolophitus pulchellus*)		X	Grassland
BLM Type 3 - Regional / State Imperiled Species			
Townsend's Big-eared Bat (*Plecotus townsendii*)	X	X	Sagebrush steppe, Juniper woodlands, Pinyon woodlands, Ridges, cliffs and rock outcrops
Fisher (*Martes pennanti*)	X	X	Coniferous forest
Wolverine (*Gulo gulo luscus*)	X	X	Coniferous forest
Trumpeter Swan (*Cygnus buccinator*)		X	Riparian/open water
Peregrine Falcon (*Falco peregrinus anatum*)	X	X	Sagebrush steppe, Ridges, cliffs and rock outcrops
Prairie Falcon (*Falco mexicanus*)	X	X	Sagebrush steppe, Grasslands, Ridges, cliffs and rock outcrops
Northern Goshawk (*Accipiter gentilis*)	X	X	Sagebrush steppe, Mountain shrub, Grasslands, Ridges, cliffs and rock outcrops, Coniferous forest
Ferruginous Hawk (*Buteo regalis*)	X	X	Sagebrush steppe
Flammulated Owl (*Otus flammeolus*)	X	X	Juniper woodlands, Pinyon woodlands, Coniferous forest
Calliope Hummingbird (*Stellula calliope*)	X	X	Aspen, Mountain shrub, Ridges, cliffs and rock outcrops
Lewis Woodpecker (*Melanerpes lewis*)	X	X	Sagebrush steppe, Juniper woodlands, Pinyon woodlands, Coniferous forest
Williamson's Sapsucker (*Sphyrapicus throideus*)	X	X	Riparian, Coniferous forest
Willow Flycatcher (*Empidonax trailii*)	X	X	Riparian
Hammond's Flycatcher (*Empidonax hammondii*)	X	X	Riparian, Juniper woodlands, Pinyon woodlands, Coniferous forest
Olive-sided Flycatcher (*Contopus borealis*)	X	X	Riparian, Juniper woodlands, Pinyon woodlands, Coniferous forest
Loggerhead Shrike (*Lanius ludovicianus*)	X	X	Riparian, Juniper woodlands, Grasslands
Sage Sparrow (*Amphispiza belli*)	X	X	Sagebrush steppe
Brewers Sparrow (*Spizella breweri*)	X	X	Sagebrush steppe
Common Garter Snake (*Thamnophis sirtalis*)	X	X	Riparian, Coniferous forest
Western Toad (*Bufo boreas*) -(Northern Rocky Mountain Group only)	X	X	Sagebrush steppe, Aspen, Riparian, Coniferous forest
BLM Type 4 - Peripheral Species			
None			
BLM Type 5 - Watch Species			
Yuma Myotis (*Myotis yumanensis*)	X	X	Juniper woodlands, Pinyon woodlands, Riparian, Coniferous forest
Long-eared Myotis (*Myotis evotis*)	X	X	Juniper woodlands, Pinyon woodlands,

Animal Species	Field Office		Associated Habitat
	Challis	Salmon	
			Riparian, Coniferous forest
Long-legged Myotis (*Myotis volans*)	X	X	Juniper woodlands, Pinyon woodlands, Riparian, Coniferous forest
Western Small-footed Myotis (*Myotis ciliolabrum*)	X	X	Ridges, cliffs and rock outcrops
Barrow's Goldeneye (*Bucephala islandica*)	X		Mountain lakes, rivers, estuaries
Swainson's Hawk (*Buteo swainsoni*)	X	X	Sagebrush steppe, Riparian, Grasslands
Blue Grouse (*Dendragapus obsurus*)	X	X	Mountain shrub, Ridges, cliffs and rock outcrops, Coniferous forest
Long-billed Curlew (*Numenius americanus*)	X	X	Riparian, Grasslands
Northern Pygmy-owl (*Glaucidium gnoma*)	X	X	Juniper woodlands, Pinyon woodlands, Coniferous forest
Great Gray Owl (*Strix nebulosa*)	X	X	Aspen, Coniferous forest
Short-eared Owl (*Asio flammeus*)	X	X	Grasslands
Boreal Owl (*Aegolius funereus*)	X	X	Coniferous forest
Western Burrowing Owl (*Speotyto cunicularia*)	X	X	Sagebrush steppe, Grasslands
Red-naped Sapsucker (*Sphyrapicus nuchalis*)	X	X	Juniper woodlands, Pinyon woodlands, Coniferous forest
Black-backed Woodpecker (*Picoides arcticus*)	X	X	Coniferous forest
Cordilleran Flycatcher (*Empidonax occidentalis*)	X	X	Riparian, Sagebrush steppe, Aspen, Juniper woodlands, Pinyon woodlands, Coniferous forest
Pygmy Nuthatch (*Sitta pygmaea*)	X	X	Coniferous forest
Sage Thrasher (*Oreoscoptes montanus*)	X	X	Sagebrush steppe
Green-tailed Towhee (*Pipilo chlorurus*)	X	X	Mountain shrub
Grasshopper Sparrow (*Ammodramus savannarum*)	X	X	Sagebrush steppe
Brewer's Blackbird (*Euphagus cyanocephalus*)	X	X	Riparian, Sagebrush steppe, Aspen, Mountain shrub, Juniper woodlands, Pinyon woodlands, Grasslands
Cassin's Finch (*Carpodacus cassinii*)	X	X	Aspen, Mountain shrub
Shorthead Sculpin (*Cottus confusus*)	X	X	Aquatic
Torrent Sculpin (*Cottus rhotheus*)	X		Aquatic

Plant Species	Field Office		Associated Habitat/BLM Locations
	Challis	Salmon	
BLM Type 1 - ESA Listed, Proposed & Candidate Species			
None			
BLM Type 2 - Rangewide/Globally Imperiled Species - High Endangerment			
Lemhi milkvetch (*Astragalus aquilonius*)	X	X	Low elevation sagebrush steppe; early seral habitat, disturbed areas in Challis Volcanics, Lemhi River Valley
Idaho sedge (*Carex parryana ssp. idahoa*)		X	Moist alkaline meadows in upper Lemhi Valley
Salmon twin bladderpod (*Physaria didymocarpa* var. *lyrata*)		X	Mid-elevation talus slopes in sagebrush foothills near Salmon

Plant Species	Field Office		Associated Habitat/BLM Locations
	Challis	Salmon	
Idaho range lichen (*Xanthoparmelia idahoensis*)		X	Bentonite “badlands” in sagebrush steppe near Salmon
BLM Type 3 – Rangewide/Globally Imperiled Species - Moderate Endangerment			
Challis milkvetch (*Astragalus amblytropis*)	X		Clay slopes in Challis Volcanics, with sagebrush or shadscale
Meadow milkvetch (*Astragalus diversifolius*)	X	X	Moist soils in alkaline meadows in Birch Creek and Pahsimeroi Valleys
Plains milkvetch (*Astragalus gilviflorus*)		X	Barren knolls, scree, rocky outcrops in foothills of Beaverhead Range
Blue grama (*Bouteloua gracilis*)	X	X	Grasslands, sagebrush steppe in Salmon and Pahsimeroi Valleys
Welsh’s buckwheat (*Eriogonum capistratum var. welshii*)	X		Dry windswept valley bottom alluvial fans and benches to foothill ridges and bluffs of the surrounding mountains in Lost River and Lemhi Range
Marsh felwort (*Lomatogonium rotatum*)		X	Spring-fed alkaline meadows, fens, and streamside areas in Summit, Birch, and Texas Creeks
Challis crazyweed (*Oxytropis besseyi* var. *salmonensis*)	X		Sagebrush and salt desert shrub in sandy washes or open slopes in rocky Challis volcanics soil, Salmon River Valley
Lemhi penstemon (*Penstemon lemhiensis*)		X	Early seral habitat and areas of disturbance in dry grasslands, sagebrush steppe, and open ponderosa pine or Douglas-fir/grasslands, Beaverhead and Lemhi Ranges
Alkali primrose (*Primula alcalina*)	X	X	Spring-fed alkaline wet meadow systems in upper Lemhi, Birch Creek, and Pahsimeroi Valleys
Wavy-leaf thelypody (*Thelypodium repandum*)	X	(X)	Steep shale banks derived from volcanic and metamorphic rocks, roadsides and disturbed areas, Salmon River Valley
BLM Type 4 – Species of Concern			
Pink agoseris (*Agoseris lackschewitzii*)		X	Wet meadows with the soil saturated throughout the growing season, Beaverhead and Lemhi Ranges
Rush aster (*Aster junciformis*, syn. *Symphyotrichum boreale*)	X	(X)	Calcareous wetlands, Chilly Slough
Two-grooved milkvetch (*Astragalus bisulcatus* var. *bisulcatus*)		X	Open gullies and bottomlands in Lemhi River Valley
Pale sedge (*Carex livida*)	(X)	X	Bogs and fens, Texas Creek
Cushion cactus (*Coryphantha vivipara, = Escobaria vivipara*)		X	Dry foothills in Salmon and Lemhi River Valleys
White eatonella (*Eatonella nivea*)	X	(X)	Sandy soils over basalt scabland, Challis Volcanics, Salmon River Valley
Hoary willow (*Salix candida*)	X	X	Sub-irrigated alkaline meadows, Birch Creek and Pahsimeroi Valleys
BLM Type 5 - Watch Species (not currently Idaho BLM Sensitive, may warrant Sensitive status in the future)			
Cusick’s horse-mint (*Agastache cusickii*)		(X)	Dry rocky slopes and loose talus at mid to upper elevations

Plant Species	Field Office		Associated Habitat/BLM Locations
	Challis	Salmon	
Ibapah springparsley (*Cymopterus ibapensis*)		X	Carbonate scree in Railroad Canyon, Beaverhead Range

(X) - Potential habitat, no known occurrences

APPENDIX F
Riparian Herbicide Buffer Development

Off-Site Drift (Handheld Spray Application)
Environmental Risk Assessment Link; SERA (2004b)
http://www.fs.fed.us/r6/invasiveplant-eis/Risk-Assessments/121804_Imazapyr-final.pdf

Chemical treatment of noxious weeds in riparian areas creates the potential for off-site drift. Off-site drift is more or less a physical process that depends on droplet size and meteorological conditions rather than the specific properties of the herbicide, estimates of off-site drift can be modeled using AgDRIFT (Teske et al. 2001 *in* SERA 2004b). AgDRIFT is a model developed as a joint effort by the EPA Office of Research and Development and the Spray Drift Task Force, a coalition of pesticide registrants.

Drift associated with hand held sprayer (directed foliar application) application is likely to be much less than aerial or boom spraying, although studies quantitatively assessing drift after hand held sprayer applications have not been encountered. Drift distance can be estimated using Stoke's law (see SERA 2004b, page 4-13), which describes the viscous drag on a moving sphere. In typical backpack ground sprays, droplet sizes are greater than 100 µ, and the distance from the spray nozzle to the ground is 3 feet or less. In mechanical sprays, raindrop nozzles might be used. These nozzles generate droplets that are usually greater than 400 µ, and the maximum distance above the ground is about 6 feet. In both cases, the sprays are directed downward.

According to Stoke's law (SERA 2004b, page 4-13), the amount of time required for a 100 µ droplet to fall 3 feet (91.4 cm) is approximately 3.2 seconds. The comparable time for a 400 µ droplet to fall 6 feet (182.8 cm) is approximately 0.4 seconds. Assuming a 5 mile per hour (7.5 feet/second) perpendicular wind, 100 µ particles falling from 3 feet above the surface could drift as far as 23 feet (3 seconds × 7.5 feet/second). A 400 µ particle applied at 6 feet above the surface could drift about 3 feet (0.4 seconds × 7.5 feet/second).

To reduce risk to protected salmonids from riparian herbicide treatment, we used the 23 foot distance as an estimate of the worst-case scenario for off-site drift. From this we determined that at distances < 20 feet from live water or shallow water tables where soil permeability is high that a 5 mph wind would be the maximum allowed. Under this condition, application of herbicides is further limited to spot treatment of individual plants (Appendix C, Buffer Table). Using spot treatment, nozzle heights are seldom > 2 feet above ground. Salmon and Challis BLM weed technicians also measure wind velocity on-site.

Even under conditions where off-site drift to adjacent live water might occur, the probability of producing a measurable acute, chronic, or sub-lethal effect to protected salmonids is insignificant. For example, the Challis Field Office uses SP2™ Systems 4 gallon backpack sprayers with TeeJet™ nozzles for weed control. For safety reasons backpacks are only filled to 3 gallons (11.4 liters) of solution. At an application rate of 0.95 liters/acre, about 1% of the solution (approximately 0.09 liters) of herbicide would be applied. The SP2 sprayer with a typical 80-110° spray angle nozzle applies herbicide at a working pressure of between 15-80 psi. Using these nozzles at an average spray pressure of 45 psi produces droplet sizes in the range of

400-500 µ. According to TeeJet's™ technical data sheet, droplets below 200 µ are the greatest contributors to off-site drift. TeeJet™ estimates that 7-11% of the spray would be ≤ 200 µ from 80 and 110° nozzles, respectively. Under these conditions the total amount of herbicide made available for drift (≤ 200 microns) would be in the range of 6.2-9.7 ml per backpack.
One backpack treats approximately 1/8 of an acre. During the 2008 field season 7.2 riparian acres were treated in the Challis Field Office, equating to approximately 57 backpacks. This results in a "worst case" scenario of 353-552 ml of total herbicide formulation available for off-site drift. Although low, this number is an overestimate because total riparian herbicide formulations are often comprised of 50% active ingredient. The potential for negative effects to protected salmonids would be further reduced by instantaneous dilution, absorption from non-target plants, and soil adsorption.